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The Green Build And Universal Design Resource™

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Optimum Performance Home®

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plus

Making The American Dream Universal

Breaking Ground Developments

Volume 3, Number 2, Issue 14
April 2008

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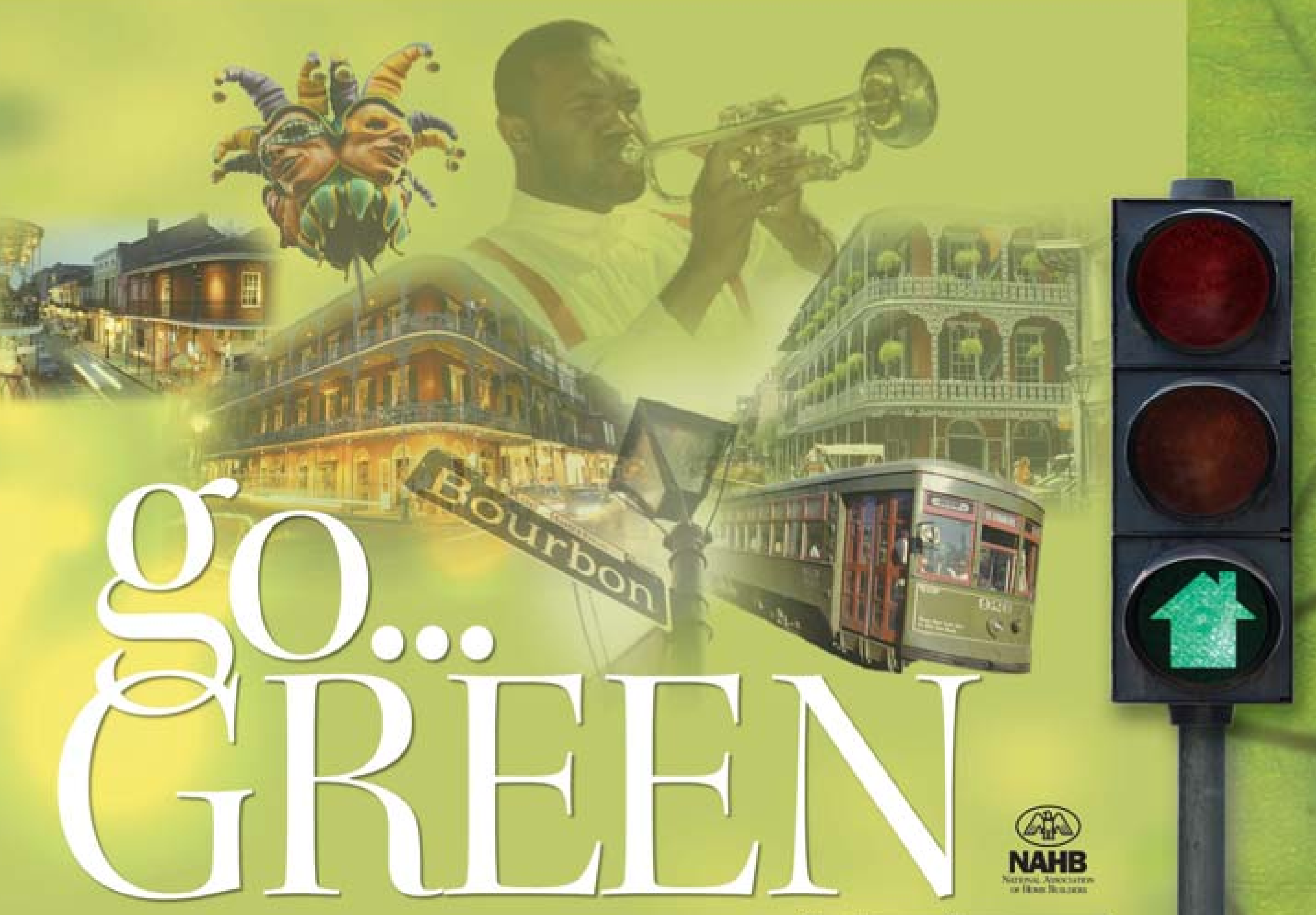

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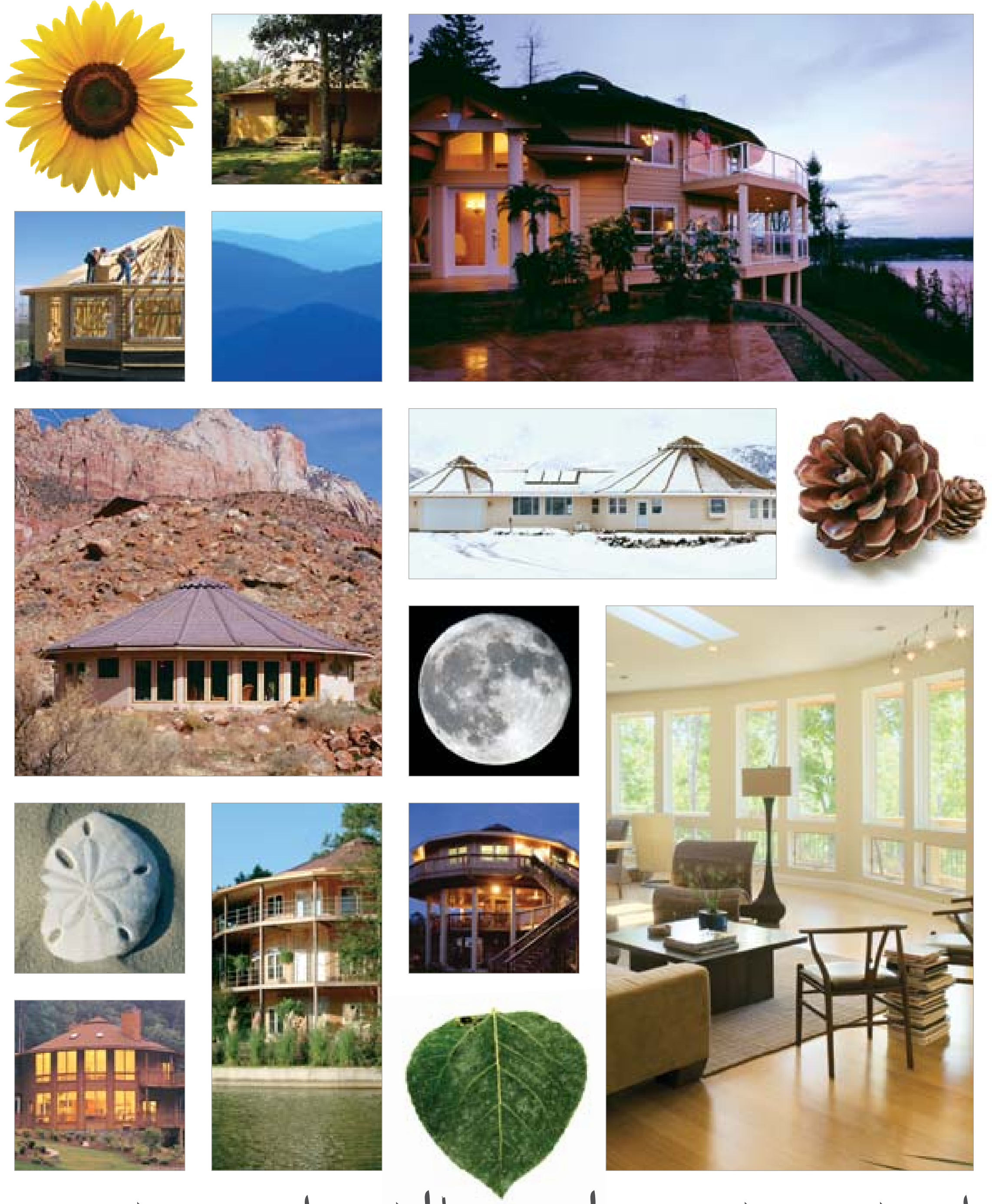

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ULTIMATE HOMEDESIGN®
The Green Build And Universal Design Resource™

VOLUME 3, NUMBER 2, ISSUE 14
April 2008

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MISSION STATEMENT

The mission of *Ultimate Home Design* is to serve as a catalyst for homeowners to create demand for architects, designers, and builders to adopt the concepts and building practices that define human-centered, optimum-performance home design. *Ultimate Home Design* is aimed at broadening the segment of the American population that is paying closer attention to the products they buy, looking beyond price and branding to focus on other elements of the production and value chain. Increasingly homeowners want to support sustainable building practices that result in a higher living standard. *Ultimate Home Design* is for those homeowners who want to promote a broader shift in patterns of production and consumption by encouraging practices that better reflect their personal values. We are advocates for using products that reduce energy and use renewable, recycled content or otherwise environmentally preferable materials. An important part of our mission is to promote building practices that result in a substantial reduction in energy use for space conditioning, water heating, lighting, and appliance operation. Another important aspect of our mission is to promote construction practices that improve the indoor environment and reduce the risk of building-related illness. This translates to improved occupant health and comfort by improving thermal comfort; natural lighting and electric illumination; and controlling humidity, odor, noise, and vibration.

Ultimate Home Design is for the thinking homeowner, who wants to be educated and learn about intelligent options for home design, whole-house system design, and comprehensive electronic lifestyle features that can enrich the quality of day-to-day life while reducing the cost of operating a home. With the knowledge gained reading *Ultimate Home Design*, you will be empowered to make intelligent choices about the design and make-up of your home, whether considering remodels or additions, planning a new home, or evaluating an already-built home. *Ultimate Home Design* will explore the wide range of possibilities within the context of designing Optimum Performance Homes™ that integrate universal design architecture; sustainable green building materials and techniques; energy-efficient power systems for electricity, lighting, heating, and air conditioning; water conservation techniques; and comprehensive electronic lifestyle features.

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Ultimate Home Design's Readers' Feedback e-mail address is: **Gary@UltimateHomeDesign.com**.

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E-mail news submissions to: **Gary@UltimateHomeDesign.com**. Direct all press releases, announcements, news, and calendar events to that e-mail address or send to the Temecula Office. Writers, both freelance and industry-supported, are invited to contact the publisher to discuss article submittals. Completed Optimum Performance Home™ project submittals for publication consideration are welcome. Manufacturers are invited to submit product releases that support the mission of the magazine.

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Understanding "Green" Building Standards

So-called "green building" is now an exploding market with an increasingly number of home builders adhering to or preparing to adhere to "green building" guidelines and standards. Home builders are feeling the growing demand for energy-efficient homes, durability, lower operational costs, healthy home-interior environments, and smaller ecological impact. Within the next couple of decades the strength of this movement will be so pervasive that homes that do not meet credible "green building" guidelines and standards will be at a substantial market disadvantage.

The U.S. Green Building Council (USGBC) provides national guidelines and standards through various "LEED®" (Leadership In Energy & Environmental Design) programs that are regarded as the "green" standard to which all other programs are measured. LEED programs have matured over the years with the LEED for Homes program now the leading standard. A less-strict compliance program is the newly launched National Association of Home Builders' National Green Building Program, an education, verification, and certification program that will allow builders anywhere to build green homes. NAHB's program is based on green building guidelines developed three years ago, known as the Model Green Home Building Guidelines. The NAHB has helped launch numerous local "green building" programs based on its voluntary guidelines, with more than 100 in development.

The primary difference between the NAHB's program and LEED for Homes is that NAHB's program is designed to enable mainstream builders to improve build quality using mostly conventional practices and materials. The standard requires builders to include features in seven categories: energy, water and resource efficiency; lot and site development; indoor environmental quality; and homeowner education. LEED programs encourage leading-edge building performance in similar categories. The American National Standards Institute (ANSI) is adapting NAHB's program guidelines into standards.

Both of these national programs are providing a "green" focus for spec and production home builders, as well as new marketing opportunities for building material manufacturers and dealers. For the homeowner, these programs provide certification of construction quality and more thorough documentation on the homes that they will purchase.

Both national programs involve third-party, digital photography, and builder and installer verification. Once a home is approved for occupancy, all the data submitted during the certification process is reviewed and the level of performance or "shade of green," according to the respective rating scale, is determined. The "greenest" LEED for Homes rating is Platinum, while Emerald is the top-level achievement for the National Green Building Program.

Other programs are local and regional and, as well, there are several material and product certification programs—such as GreenSpec, GreenGuard, Green Seal, Green Globes, ENERGY STAR®, and others announced. We covered the GreenGuard program in Issue XIII and ENERGY STAR in Issue XII. LEED for Homes has had extensive coverage in the magazine since its inception. In future issues, we will publish articles on the other material and product certification programs.

As a homeowner, it is wise for you to research and ask questions so that you can educate yourself

ENERGY STAR

U.S. GREEN BUILDING COUNCIL

LEED for HOMES

GREENGUARD Indoor Air Quality Certified

For more information on this advertiser, circle 05

on "green building" certification programs as well as the increasingly growing list of products and materials that are marketed as "green." At this stage in the "green" movement, homeowners cannot rely on architects or architectural designers, or builders or contractors, as knowledgeable and experienced in the practice of "green building." These professionals and trades are searching for answers as well.

Such education has been the core mission of *Ultimate Home Design*, to share with our readers knowledge that will allow them to better understand what their options are when it comes to engaging in their own projects.

In this issue of *Ultimate Home Design*, we are publishing Part XIV, the second article on the construction phase of the first Optimum Performance Home®, which is now under construction at The Sea Ranch, California. This in-depth article series provides comprehensive insight into what's involved in building your own "green" and sustainable, and "biophilic" and "universal" designed home. There is no other media source that provides the level of education that this series does, which delves into the science of optimum performance "green" building and the application of products and practices from which to learn and become inspired. The documentation of the building of this LEED Platinum home is a work in progress, facilitated with high-definition images and streaming movies accessible through our Web site.

There are two other interesting and informative articles featured in the issue, including:

Our regularly featured "New To The Neighborhood" showcases newly introduced eco-friendly products.

"Breaking Ground" re-appears in this issue with a 12-page spread covering new developments that impact the "green building" movement, providing our readers with important insights.

Once again, we feature an in-depth article on The New American Home 2008, the annual National Association of Home Builders' showcase home. This year's home is the first to be certified under the new HAHB National Green Building Progam.

"Making The American Dream Universal" is Ken Little's documentation of what it will take to meet the aging-in-place and potential disability needs of "baby boomers."

Thank you for your support. This year promises to be remarkable, with our coverage of the construction of the first Optimum Performance Home. UHD

For more information on this advertiser, circle 06

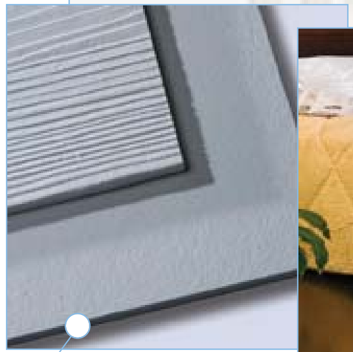
For more information on this advertiser, circle 07

New to the neighborhood

David DelGrosso

Henkel has announced the new OSI® GreenSeries, providing homeowners and builders with a complete line of environmentally friendly, high-performance construction adhesives and sealants.

OSI GreenSeries is the first adhesive and sealant program developed to meet the evolving needs of the green market. These items emit minimal amounts of Volatile Organic Compounds (VOC), well below industry standards for VOC compliance. Additionally, GreenSeries sealants increase energy efficiency by effectively reducing air infiltration, while improving indoor air quality. For more information: www.greenseries.com



For beautiful floors that also respect the environment, a bamboo floor from **Lumber Liquidators** is an option worth exploring. Bamboo is one of the fastest-growing plants on Earth, making it an ecologically sound choice in flooring. Bamboo is actually a grass and has an extensive root system that creates new bamboo shoots after it's been harvested, thereby requiring no replanting.

Lumber Liquidators offer 21 varieties (from three brands of bamboo) in varying sizes of floor boards and finishes. The new Ty Pennington Collection offers three choices in bamboo floors. Bordeaux Bamboo features a rich, Bordeaux color and is made from elegant old-growth bamboo; Sambuca Bamboo is lavishly stained with a rich chocolate finish; and Miso Bamboo is an organic floor in both look and feel that encapsulates Ty's belief of eco-friendly luxury. For more information: www.lumberliquidators.com

The new NichiBoard lap siding from **Nichiha**, offers significant advantages over typical fiber cement siding—including a more distinctive texture, greater workability, and no added crystalline silica for a more environmentally conscious choice.

NichiProducts are produced utilizing advanced technology that provides exemplary performance. Manufactured without additional crystalline silica sand, NichiProducts are stronger, easier to work with, and better for the environment—as silica dust may create harmful conditions during the cutting stages.

During the manufacturing process, they apply the cedar texture with heat and over one million pounds of pressure, creating deeper, more authentic texture and crisp, clean edges—and then NichiProducts are cured using two high-heat processes that assure that the boards are hardened and strengthened to exacting standards. For more information: www.nichiha.com

With **Gentry's** all new EasiKlip floating-floor system, both professionals and do-it-yourselfers will be able to get superior results with the system's can't-fail simplicity. EasiKlip combines patented connectors and Gentry's exclusive FusionPlank™ solid hybrid flooring to produce some amazing results.

This patented EasiKlip system combines precision-milled planks with extruded aluminum clips that are pre-installed on each of the floor planks, making the installation as simple as insertion, alignment, and closure. And the millwork on the plank ends overlaps the previously installed plank so that no gluing is required, and the entire system locks together, producing a beautifully integrated floor that rivals nail-down and glue-down installations. For more information: www.gentryfloors.com

AirFlow Technology, a provider of innovative and affordable home-comfort solutions, has added some new enhancements to their popular AirFlow Breeze vent.

The AirFlow Breeze is designed to increase the volume of air delivered into the uncomfortable room by utilizing two low-voltage fans, which automatically turn on and off by a temperature-sensing electronic controller. And the amount of airflow is controlled by a three-speed setting option.

With the latest upgrades, the AirFlow Breeze can now fit into any 4 inch by 12 inch register opening, as well as any 4 inch by 10 inch opening. In addition to fitting in floor vents, both model sizes come with mounting hole locations for easy installation in vents located in the wall. For more information: www.aftproducts.com

UFLOOR Systems has introduced a new two-component, roller-applied epoxy moisture barrier for the installation of all floor coverings, including hardwood flooring. A water- and solvent-free compound, UZIN PE 480 completely eliminates moisture and vapor transmissions from concrete slab substrate—and acts as a restriction-free, damp-proofing barrier against extremely high moisture levels on moisture-resistant surfaces.

Due to its high viscosity, UZIN PE 480 has excellent filling capacity and a rapid setting time to produce a very heavy-duty performance. UZIN PE 480 is ideal for use on top of mineral substrates, such as cement, concrete, ceramics, and terrazzo. Its fast drying time makes it ideal during high-speed construction of interior and exterior floors. For more information: www.ufloorsystems.com

Eliane, a global leader in the manufacturing of porcelain and ceramic tile, has introduced Contemporanea, a large-format technical porcelain tile series inspired by the textures, colors, and architecture of a contemporary urban metropolis.

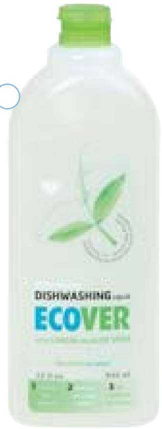
Contemporanea's three neutral colors are available in two distinct surface finishes—Natural and Lapado—offering architects, specifiers, and designers a versatile collection for both residential and commercial applications. The smooth and polished texture of the Lapado finish, and the textured relief of the Natural finish, give buyers a choice between two unique surfaces for their residential application needs. For more information: www.elianeusa.com

With the widest range of color options in the industry, **InSpire** roofing now makes it easy for homeowners to express their eclectic style. Using technologically advanced methods and eco-friendly materials, InSpire roofing has the appearance of natural slate, but is more durable—thanks to its 100 percent recyclable blend of virgin resins and natural limestone.

The architectural elegance of these slate-like roofing tiles comes from the patented molding process that creates varied edges and surfaces for a natural effect—adding a premium value to your home, without the high cost and difficult maintenance of authentic slate. And custom color combinations are also available by consultation. For more information: www.inspireroofing.com

Trusted by millions of consumers as the source to turn to for unbiased product rankings and comparisons, the independent, non-profit *Consumer Reports* has thrice scored **Ecover** dishwashing products in the top three for effective cleaning and the prevention of redeposit. In this January 2008 issue of *Consumer Reports*, the magazine applauds Ecover's performance and price point, ranking it a close second only to Dawn.

In September 2006 *Consumer Reports* ranked Ecover Automatic Dishwashing Powder number one in performance, placing it above Palmolive and Costco's Kirkland Signature. And Ecover's Dishwashing Tablets tied America's Choice for second place in the May 2006 issue. For more information, visit www.ecover.com



The new innovative **Watts PoolDoc™** pool and spa tester, tests for Free and Combined Chlorine levels, pH, Total Alkalinity, and Bromine. What separates this instrument from other testers on the market is that the PoolDoc settings can be personalized to match your pool or spa,and will give recommendations based on that information.

Everything needed to personalize it can be entered; such as pool size in gallons, desired levels, plus the chemicals used and their concentrations. And the digital display will step you through the testing procedure and provide a prescription of how to bring your pool or spa chemistry back into the proper balance for your pool. For more information: visit www.PoolDoc.net

When it comes to serious yard work, most homeowners purchase gas-powered yard equipment. However, this spring **Black & Decker** is introducing the first ever cordless string trimmer that rivals the power of gasoline string trimmers.

Black & Decker's new 36-volt String Trimmer is a true technological breakthrough that for the first time offers performance matching gas-powered string trimmers, but with a clean battery power source. Now homeowners can have the power of gas, but without the hassles of gas cans, pull-cords, and gas emissions in your yard.

For more information: visit www.blackanddecker.com

Kolbe now offers its high-quality, wood windows and doors with universal-design options that simplify comfortable, accessible, independent living. The Ultra and Heritage Series features include motorized operators, longer crank handles, larger knobs, or oversized lever locks to make casement windows easier to use. On double hungs, a crank handle allows the bottom sash to be operated with minimal effort in a seated position.

To make entry and exit easier, Kolbe Garden-Aire sliding doors may be ordered with an aluminum sill ramp for a smooth transition between interior and exterior. For swinging doors, flush-to-floor sills are engineered into the doorframes as integral components to ensure that the level of the finished floors aligns with the thresholds for accessibility. Lever handles also are offered on swinging doors, making them easier to operate than doors with knobs or latch handles.

Universal design at Kolbe emphasizes more than function. Custom wood species, exterior colors, and divided lights are among the breadth of options to consider when choosing windows and doors that not only make everyday living easier and more comfortable, but enjoyable for years to come.

For more information: visit www.kolbe-kolbe.com

PRODUCT showcase

Auralex Acoustics, the industry leader in innovative sound control solutions is introducing Eco-Friendly StudioFoam®, the first "green" acoustical foam product on the market. StudioFoam brand products now include soy components, reducing petroleum-based chemical usage by up to 60 percent, and lessening dependence on fossil fuels, including foreign crude oil. This greener formula helps reduce global warming emissions, yet retains the longevity and acoustical properties that Auralex is known for.

Auralex StudioFoam is manufactured without harmful Chlorofluorocarbons (CFC's), which have been implicated in the depletion of the ozone layer. In making the conversion over to the new Soy-based hybrid formula, these products now boast an improved performance and durability over conventional petroleum-based foams. For more information: visit www.auralex.com

Tile Redi now manufactures and markets one-piece, leak-proof shower pans, which, once installed, can immediately accept ceramic tile or natural stone installed right to their surfaces. These Tile Redi barrier-free shower pans are produced so that there is no raised "wall" as one enters the shower. Rather, the one-piece unit is slightly pitched so that all water, upon hitting the shower's floor, instantly runs downward to the drain. This eliminates water running over onto the bathroom floor, minimizes ponding in the shower, and ultimately, cuts down on users slipping, and hence, experiencing potential injury.

Additionally, Tile Redi barrier-free shower pans allow for those who must enter the shower on a wheelchair, the freedom to simply wheel into the shower without any kind of raised area that could inhibit their entrance. For more information: visit www.tileredi.com

The classic design of the new Cambria™ mid-efficiency wood-burning fireplace by **Lennox** captures the feel of a true masonry fireplace with an expansive viewing area and louver-less design, creating an elegant, open fire look.

The 14 inch-deep firebox holds logs up to 20 inches long, and with a ceramic glass viewing area measuring 28 inches wide by 28 inches high, radiant heat transfers into the room while providing excellent heat resistance and safety.

Retractable pocket-style glass doors and fire screens help add to the open appearance and wide viewing area by sliding into the sides of the frame and out of sight. A brick-lined firebox complements the attractive masonry appearance, and large andirons add to the overall aesthetics, while keeping logs securely in place. For more information: visit www.lennox.com

Made from high-quality lead-free crystal glass, each **Eisch Glaskultur** "Breathable Glass" wineglass undergoes a special proprietary oxygenizing treatment, and the shape of the glass has been specially designed to accentuate the character of the wine that it holds. Within two to four minutes, a glass of wine poured into one of these magic glasses shows signs of aeration equivalent to a wine that has been decanted and aerated for one to two hours. The fully natural process takes place within the wine itself, leaving the original character and structure of the wine intact and its aroma and palate more open and generous. Available at retailers from $19.00 to $26.00 per wineglass, more information about these glasses can be found at www.eisch.de.

ULTIMATE HOMEDESIGN
The Green Build And Universal Design Resource

Breaking Ground

Recent News, Reviews, And FAQs

Issue 14, April 2008 Volume 3, Number 2

New Green Standard Issued By The NAHB

The National Association of Home Builders has launched the NAHB National Green Building Program, an education, verification, and certification program that will allow builders anywhere to build green homes.

"This is great news for our members and for all home builders, but more importantly, it's great news for home buyers," said NAHB Vice President and Secretary Bob Jones, a home builder in Bloomfield Hills, Michigan. Jones announced the program launch during a press conference at the recent International Builders' Show in Orlando, Florida. Green Building Subcommittee Chairman Ray Tonjes, a home builder in Austin, Texas, joined Jones for the announcement.

The New American Home®, which celebrates its 25th anniversary this year, was the first show home to be certified in the new program. The project was awarded "gold" level certification during ceremonies on February 12, 2008.

"The new National Green Building Standard will maintain the flexibility of green building practices while providing a common national benchmark for builders, remodelers, and developers—another big step for the green building movement," said panelists at a news conference during the International Builders' Show.

The first and only true consensus-based standard for residential green building is in its final comment period and almost ready for prime time, according to the National Association of Home Builders (NAHB).

"The National Green Building Standard is expected to be approved by the American National Standards Institute (ANSI) and published by NAHB and the International Code Council (ICC) early this spring," a panel of builders and those involved in the standards process, told reporters. The ANSI process ensures that the best technical reviews were used to create the standard.

On Thursday, February 14, NAHB members celebrated Green Day at the Show, which attracted more than 100,000 members of the home building industry in 2007. Green Day activities include the launch of NAHB's new green building initiatives, 200 green product exhibitors, and a full day's worth of green educational seminars, including a keynote address by noted architect and green building champion William McDonough.

The National Green Building Standard is based on the three-year-old NAHB Model Green Home Building Guidelines but is enhanced to include residential remodeling, multi-family building, and lot and site development—also the first of their kinds in the country. It also reflects advancements in requirements in the International Residential Code and other changes that serve as indications of the dynamic nature of green building.

Like the Guidelines that they are based on, the standard requires builders to include features in seven categories: energy; water and resource efficiency; lot and site development; indoor environmental quality; and homeowner education. It also adds the higher Emerald Level to the Bronze, Silver, and Gold certification levels for the Guidelines. To achieve the highest level of sustainable "green" building, the energy savings must achieve 65 percent or higher.

- Energy Efficiency: The builder carefully sealed all the ducts, installed the right insulation, and calculated appropriate HVAC equipment needs. The home features power-sipping appliances and fixtures.
- Water Efficiency: Low-flow toilets, aerated faucets, and efficient washing machines inside, drought-tolerant landscaping outside.
- Resource Efficiency: Recycled building materials, thoughtful waste-management techniques, and durable construction are all signs that the builder limits the use of precious resources.
- Lot And Site Development: The home is protected from prevailing winds and takes advantage of the sun's light and energy. The lot's natural features are preserved.
- Indoor Environmental Quality: The air circulates well throughout the home, and moisture and potential pollutants are minimized or sealed off from the house.
- Global Impact: Measured by whether the building materials are emitting harmful chemicals, and whether they came from local sources or were shipped from afar.
- Homeowner Education: Education on the correct operation and maintenance of the new home.

The program features a dynamic online scoring tool at www.nahbgreen.org, which shows the builder how to accrue points in the seven categories. The program sets point requirements in each category. Furthermore, there is a

nationwide directory of certified "green" built homes, a list of Certified Green Professionals, a directory of state and local "green" home building programs, and tools and resources for consumers, builders, program administrators, and policymakers.

Homes are inspected and verified by local green experts, and the documentation is sent to the NAHB Research Center for review. "If the project qualifies, the home can receive national certification from the Research Center," Tonjes explained.

"Local home builder associations will continue to provide education, advocacy, and promotional assistance to their green builders using new, expanded resources from NAHB," Jones said.

"NAHB builders have been green pioneers, building 100,000 green homes certified by local programs all over the country," Jones said. "The NAHB National Green Building Program builds on this energy and innovation and takes green building mainstream. The time has come. Home buyers are ready for green, and NAHB is ready for today's home buyers."

"The National Green Building Standard will make it easier for builders to build green. Having this information available in an ANSI standard means that it's in the language that builders don't need a special consultant to understand," said Miles Haber, a multi-family developer in Rockville, Maryland.

"NAHB's decision to transform the existing guidelines into a standard, exposing its work to the rigors of the ANSI consensus process and peer review, is yet another testament to the firm commitment the association has taken to support inclusive green building," said Michael Luzier, President of the NAHB Research Center. The Research Center is an accredited standards developer and is charged with shepherding the ANSI standard development process through a series of public hearings and comment periods.

The latest public comment period closed on February 4, and more than 600 comments were logged. Consensus committee members, who represent all facets of the home building industry as well as government agencies and the environmental community, had until March 3 to register their votes on the public comments. UHD

NAHB Introduces Certified Green Professional™ Designation

A new professional designation program from the National Association of Home Builders (NAHB) will soon provide home buyers with additional assurance that the builder or remodeler they've chosen is authentically "green."

The Certified Green Professional™ designation was unveiled Thursday, February 14 during Green Day at the International Builders' Show in Orlando, Florida.

"We know green is the future of building. With the Certified Green Professional designation, we're helping our qualified members demonstrate to their clients that the future is here," said NAHB President Brian Catalde, a Southern California home builder.

"Builders, remodelers, and other industry professionals must have at least two years of building industry experience and be involved in the construction of at least one home in the past 24 months to apply for the Certified Green Professional designation," Catalde explained.

The designation is based on the "Green Building For Building Professionals" course, a two-day training and education session that more than 700 builders have already completed since the course was piloted two years ago. Candidates must also complete a University of Housing management course, agree to continuing education requirements, and adhere to a code of ethics.

Numerous applicants took the course work during special pre-conference education sessions before the International Builders' Show opened on February 13. The business management and Green Building For Building Professionals classes are also offered at other NAHB conferences and by local home building associations throughout the country. The first class of Certified Green Professionals will receive their designations at the 10th annual NAHB National Green Building Conference, May 11 to 13 in New Orleans.

The NAHB celebrated Green Day at the International Builders' Show as a way to highlight the new designation, the NAHB National Green Building Program, and a host of special seminars, speakers, and education opportunities. On Green Day, more than 170 manufacturers displayed green products and services.

Applicants can visit nahb.org/courses to discover additional class locations for courses associated with the Certified Green Professional designation. UHD

Whirlpool Corporation Simplifies Shopping For Environmentally Friendly HVAC Products With New Symbol

In the interest of making it easier for homeowners to find HVAC products that are environmentally friendly, Whirlpool Corporation launched the EcoCentral™ Living System at the 2008 International Builders' Show. The goal is for the EcoCentral Living System name and logo to become ingrained in homeowners' minds as a symbol of environmental friendliness, much like the well-known ENERGY STAR® logo.

"With EcoCentral Living System, we wanted to create a trademarked symbol that homeowners could identify with and watch for when shopping for environmentally friendly central cooling and heating and indoor-air-quality products," said Tracy Frye, Senior Contract Marketing Manager at Whirlpool Corporation. "We're proud to offer several products that meet and exceed minimum industry standards, and EcoCentral Living System will play a vital role in helping provide homeowners with comfortable, efficient, and healthy living spaces."

The EcoCentral Living System is manifested in a trademarked logo that will appear in catalogs and advertising for Whirlpool® and Whirlpool Gold® HVAC products that carry one or more environmentally friendly features. These environmentally friendly features include: use of environmentally safe refrigerant [R410A]; ENERGY STAR-qualified or better (minimum 90 percent efficiency on furnaces/13 SEER on air conditioners or heat pumps); and contribution to environmentally friendly conditions in the home (i.e. improved Indoor Air Quality [IAQ] through air filtration, particulate removal, moisture removal, ventilation, etc). With each Whirlpool and Whirlpool Gold brand HVAC product carrying at least one of these environmentally friendly features, the entire line will have the EcoCentral Living System stamp.

Examples of Whirlpool and Whirlpool Gold brand HVAC products that meet and exceed environmental standards are air conditioners, gas furnaces, and the new Whole Home Dehumidifier with HEPA and UV Technology. Whirlpool and Whirlpool Gold brand air-conditioner models have energy-efficiency ratings up to an impressive 18 SEER, and Whirlpool WGFE Series gas furnaces get high marks as well, with 95 percent energy efficiency.

The Whirlpool brand Whole Home Dehumidifier with HEPA and UV Technology is the only whole-home air-filtration, ventilation, and dehumidification system of its kind, says the company. The unit features a high-quality, high-efficiency, whole-home dehumidifier that is capable of removing up to 160 pints of moisture a day from interior air. The product's unique HEPA and UV options remove airborne particles and help protect against airborne germs.

For more than 30 years, Whirlpool Corporation has been committed to effectively utilizing and preserving natural resources. In 1970, Whirlpool Corporation created a corporate office for environmental control; and in 2003, the company became the world's first appliance manufacturer to announce a greenhouse gas reduction strategy. Additionally, in 2007 the company announced plans to increase its commitment to environmentally sound business practices by reducing total greenhouse gas emissions 6.6 percent by 2012. Whirlpool Corporation will make these global, voluntary reductions while at the same time increasing production by 17 percent.

By staying closely involved with the building industry, Whirlpool Corporation says that it is able to help support sustainable construction that ultimately saves energy and natural resources while providing home buyers with comfortable, efficient, and healthy homes.

For more information on Whirlpool Corporation and its offerings, visit www.insideadvantage.com. UHD

Home Design Survey

The American Institute of Architects (AIA) has released its latest Home Design Trends Survey, focused on kitchen and bath trends. Some highlights include:

- Decline in demand for high-end appliances and features.
- Increased popularity of renewable materials and energy-efficient products for kitchens and baths.
- Increased demand for water-filtration systems.
- Greater emphasis on accessibility and adaptability throughout the home to accommodate an aging and less-mobile population.

For the full report, visit www.aia.org/aiarchitect/thisweek08/0208/0208b_hdts.cfm. UHD

HUD Unveils New Concept Home Vision

The U.S. Department of Housing and Urban Development unveiled its new vision for a sustainable, hurricane-resistant, and energy-efficient home at the recent National Association of Home Builders' International Trade Show in Orlando. HUD's Partnership for Advancing Technology in Housing (PATH) (www.pathnet.org) revealed the design plans for a Concept Home demonstration project to be built in Charleston, South Carolina.

The Partnership for Advancing Technology in Housing is a public-private partnership of leading-edge home builders, manufacturers, researchers, professional groups, and Federal agencies concerned with housing. By working together, PATH partners improve the quality and affordability of today's new and existing homes and help create the next generation of housing for America's families.

Concept Home Charleston will serve as a model of sustainability, hurricane resistance, efficient building practices, and floor plan flexibility. The project will incorporate the most advanced products and systems from leading manufacturers to demonstrate and educate both industry and consumers alike how design and technology innovations can create a sustainable, efficient, and durable home that's also cost effective to build and high in quality.

"The future requires that we build smarter than ever before, and that future is now," said Darlene Williams, HUD Assistant Secretary for Policy Development and Research. "This Concept Home will incorporate sustainable, flexible, and durable building approaches with cost-effective and innovative solutions to create a blueprint for generations to come."

Concept Home Charleston's design and technical specifications will meet the nation's most rigorous green building certification programs, including Leadership in Energy and Environmental Design (LEED) for Homes, ENERGY STAR, EarthCraft House, and the new NAHB National Green Building Standard.

"Energy efficiency is always a central theme among the homes I build," said Hank Hofford of Bennett Hofford Construction, the firm building the Charleston home. "The Concept Home Charleston, with its energy target of 40 percent greater than code, will enable it to serve as the national example of an efficient home."

The home's design and floor plans were created by Torti Gallas and Partners after a design charrette with technology and design experts was held at the Concept Home site last October.

"Torti Gallas has taken the next step toward creating an appealing design that also integrates a systems approach to energy, water, durability, and sustainable materials in the home. We've selected innovations that complement and work well with each other to meet the project's goals," said James Lyons, Concept Home Charleston project manager and a Senior Engineer at Newport Partners, LLC.

Major manufacturer partners in the program include Whirlpool, Alside, American Clay, Aspen Aerogels, BASF, Blue Marble Project, Broan, DuPont Building Innovations, Georgia-Pacific, Honeywell, the Metal Roofing Alliance and Englert Roofing, PGT, Pulseswitch Systems, Seisco, Viega, and Worthington Integrated Building Systems. The Department of Energy's Building America program will provide energy monitoring of the building once it's completed.

The Charleston home will be built at Poplar Grove, a 6,000-acre nature conservation community within Greater Charleston's historic Ashley River Preservation District and is expected to be completed by Fall 2008. UHD

EPA Sets ENERGY STAR Standard For Digital Televisions

The Environmental Protection Agency has updated its ENERGY STAR specification for digital televisions (DTVs) in an effort to ensure that with the impending DTV switch in February 2009, manufacturers are providing energy-conscious solutions for shoppers.

The new specification, which addresses all digital television display technologies, will grant the ENERGY STAR label only to the top 25 to 30 percent most energy-efficient TV models. In addition, for the first time, the new ENERGY STAR specification will take into account active mode or "on" mode power consumption in addition to standby mode energy use.

The Consumer Electronics Association (CEA) (www.ce.org) heralded the move, congratulating the EPA for working to further reduce energy consumed by digital televisions.

"CEA and its members are proud to have worked directly with the EPA to develop a specification so new-generation televisions can bear the well-recognized ENERGY STAR label," said Gary Shapiro, President and CEO of CEA. "The consumer electronics industry has been committed to ENERGY STAR since its inception in 1992, and together we have developed market-oriented energy-efficiency incentives covering major categories of consumer electronics."

Of the two-billion ENERGY STAR products sold since 1992, more than one billion have been consumer electronics. UHD

Availability Of Sustainable Wood Products Hampered By Certification From Forest Stewardship Council

The Headlines

Monopolies Are Not Good For The Environment

Exclusivity Drives Up Prices And Steers Builders To Turn To Petroleum Products And Other Non-Renewable Resources

FSC Exclusivity Could "LEED" To Other Environmental Problems

The Case For Non-Exclusivity

Long before people in the "new world" began to understand the risks of dwindling timber supplies, European countries saw first hand the potential danger of over-harvesting. From Germany's proactive, 18th-century commitment to renewable forestry, to England's reforestation efforts in the wake of the Industrial Revolution, many countries learned these lessons well.

In this tradition, The Programme for the Endorsement of Forest Certification schemes (PEFC) was founded in 1999. Stemming from the rich, longtime traditions of sustainable forestry in Europe, PEFC has grown to impressive, global proportions. Today, the Sustainable Forest Management criteria it uses are supported by 149 governments worldwide, covering 85 percent of the world's forest area.

PEFC respects and integrates each country's forestry practices, using a structure that works in tandem with local governments, stakeholders, cultures, and traditions. Yet, in some circles, the PEFC and its European roots are inexplicably frowned upon.

For instance, in today's "green" building movement, the LEED rating system is the most successful such program in the world. Administered by the U.S. Green Building Council (USGBC), the LEED system is now in use in more that 14,000 construction projects in 30 countries, including all 50 United States.

However, lumber used for LEED construction projects must be certified by just one entity—the Forest Stewardship Council (FSC).

As the demand for green, renewable resources continues to grow, why does LEED insist on this exclusive arrangement with a single-certification scheme?

Both the FSC and the PEFC use independent third-party certification, providing abundant reassurance that the wood originates from sustainably managed forests. They include oversight by all vital stakeholders—member countries, non-governmental organizations, landowners, social groups, and others.

Within each group's framework, the national governing bodies from individual countries and regions develop standards with substantial opportunity for public review. And both provide clear chain-of-custody tracking and labeling that assure end users of legal and environmentally sound harvesting.

One independent industry consultant showed how the PEFC even goes beyond FSC standards, when it comes to conformity, with a number of ISO certification and accreditation guides.

This FSC-LEED exclusivity is especially baffling, say the proponents of PEFC certification, when you remember that PEFC certification represents about two-thirds of all certified forests globally, which in all account for about a quarter of the global industrial roundwood production.

Additionally, many FSC-certified acres are owned by governments or families focused on preservation—they have no intention to harvest for building-material production. And available FSC-certified veneers are often just a fraction of the number of veneers available through the other certification schemes.

It's clear that accepting PEFC certified wood products would open a tremendous new resource pool for the green building movement.

Here in North America, leading national forest certification programs, such as the Canadian Standards Association (CSA), and the Sustainable Forestry Initiative (SFI)—both part of the PEFC—create a central source for certified timber for North America. Combined, CSA and SFI certify more than 328 million acres of sustainable forestland in North America, versus about 69 million total acres certified by the FSC.

Limiting the availability of sustainable wood products drives up prices, prompting more builders to turn to materials derived from petroleum products and other non-renewable

resources. Or they turn to concrete and other materials that require significantly more energy to produce, ultimately increasing greenhouse gas emissions and leaving a bigger carbon footprint.

Left unaddressed, all of these issues could lead to further environmental damage, something that LEED and the FSC included—would like to prevent. LEED's acceptance of PEFC-certified lumber would be a significant step in the right direction for greater, worldwide adoption of green building practices. UHD

Source: Doug Martin, Pollmeier Inc., www.pollmeier.com

Ownership Of "Green" Homes Expected To Increase Rapidly

McGraw-Hill Construction, part of The McGraw-Hill Companies, has released The Green Homeowner SmartMarket™ Report, produced in conjunction with the NAHB, providing insight into the mindset of the "green" homeowner and the homeowner remodeler using green products.

The major findings of the report include:

- The market for true[1] green homes is expected to rise from $2 billion to up to $20 billion over the next five years.
- Standard homes are becoming increasingly green, with homeowners using green products for 40 percent of their remodeling work.
- Most Americans find out about green homes through word-of-mouth, followed by television and the Internet.
- Green homeowners are happy with their homes and are recommending them at rates significantly higher than recommendation levels of other industries.
- Homeowners are buying green homes because they are concerned about the health of their families, as well as to reduce energy and other home-operating costs.
- Education and awareness of green ranks as the most important obstacles, slightly higher even than the additional first costs associated with building green.

"Our findings are particularly powerful because they point to the reasons behind the market trends we're seeing of the increasing number of green homes," said Harvey M. Bernstein, Vice President of Industry Analytics, Alliances and Strategic Initiatives for McGraw-Hill Construction. "People are spreading the word about their green homes, which is most effective because that's how buyers are hearing about the opportunities of green. It's a cycle that is bearing out in the marketplace."

McGraw-Hill Construction found in prior studies that residential builders and the commercial industry believed that the additional costs of green were by far the most significant challenge to more rapid growth in green building. But for homeowners, today's survey shows that while costs and the availability of green homes are still an obstacle, the most important issue is lack of awareness.

"This information gap is actually a great opportunity for the industry, as well as for the media, non-governmental organizations, and government itself to provide more effective communication of the advantages of green homes," added Bernstein.

The size of the homeowner remodeling market that is using green products is large: 40 percent of homeowners remodeling their houses are doing so with green products, especially their windows and heating and cooling systems.

As Bernstein concludes, "Again, the industry needs to listen to what the consumer is starting to want in their homes. As we look at changes within the slow residential market, green is a phenomenal opportunity area."

"This study reinforces the need for the steps we have already taken to help "green" the home building and remodeling market," said Ray Tonjes, Chairman of the Green Building Subcommittee for the National Association of Home Builders.

"We're almost finished with the first consensus-based standard for green home building and remodeling, we've significantly expanded our education offerings, and we're launching the NAHB National Green Building Program. NAHB is bringing green to the mainstream," Tonjes said.

The research comprising the core findings of The Green Homeowner SmartMarket Report was conducted with NAHB support. The definitions of a green home were pulled from the NAHB's Model Green Home Building Guidelines, which can be found at http://www.nahb.org/gbg. For more information on The Green Homeowner SmartMarket Report, visit www.analyticsstore.construction.com. For more information on the National Association of Home Builders, visit www.nahb.org. For more information on McGraw-Hill Construction, visit http://www.construction.com. UHD

1 Definition of a True Green Home: True Green Homes are defined more narrowly as homes that contain elements in three of five environmental building categories: Energy Efficiency, Indoor Air Quality, Water Efficiency, Resource Efficiency, and Site Management.

American Society Of Landscape Architects Create Sustainable Sites Rating System

The American Society of Landscape Architects (ASLA) has created Sustainable Sites, a new environment-focused rating system designed to complement the LEED rating system for buildings. The Sustainable Sites Initiative is an interdisciplinary partnership between the American Society of Landscape Architects, the Lady Bird Johnson Wildflower Center, the United States Botanic Garden, and a diverse group of stakeholder organizations, to develop guidelines and standards for landscape sustainability. The criteria is designed to measure the ecological aspects of public, commercial, and residential landscapes. This expert group of environmental organizations and landscape architects compiled a list of sustainable practices for soils, hydrology, vegetation, human health, and materials. The new criteria will be incorporated into future versions of LEED.

The Sustainable Sites program is designed to be incentive-based and voluntary, as are the LEED programs. Designers and site managers are encouraged to adopt the incentive-based practices to improve the sustainability of their landscapes. Among the recommendations are practices that prevent water pollution and protect against erosion, protecting and enhancing urban climates. Other guidelines and standards pertain to reducing greenhouse gas emissions, promoting biodiversity with a mix of native species and ecologically appropriate non-native species, reducing water waste, reducing water pollution, reusing and composting yard waste, promoting biophillic design, and reducing energy consumption.

"We want people to understand the true value of landscapes," says Heather Venhaus, an environmental designer with the Wildfire Center and project manager for the initiative. "It goes beyond just cutting down a tree, grading a property, and then replanting vegetation. It's about how landscapes support our lives, sequester carbon, and mitigate the destruction of development."

The five-year plan will include pilot projects and the development of three products: Standards and Guidelines, Rating System, and Reference Guide. Currently in progress is the development of the first product, the Standards and Guidelines. Preliminary findings of this product were released in November 2007. Feedback received during the public review period (which ended January 11, 2008) is being reviewed by project staff, and a response was posted on March 1, 2008. An updated draft on the Standards and Guidelines will be released in November 2008.

For more information, visit www.sustainablesites.org. UHD

New Technologies Converge To Create Breakthrough New Siding Option

The classic New England home, an icon of American architecture, makes an enduring statement of character and individuality with its clean lines, strongly contrasting colors, and inspired trim. For more than 200 years, rustic, vertical grain Western red cedar—today in short supply —was the siding of choice for the New England-style home, setting the standard for its appearance. But wood siding is high maintenance, requiring cleaning, refinishing, and even replacement, if not consistently maintained.

Recently, a collaborative effort involving The Sherwin-Williams Company and NuCedar Mills of Chicopee, Massachusetts, in conjunction with Jain Irrigation Systems Ltd. of Jalgaon, India, has resulted in a finished product that could shake up the $12 billion market for exterior siding. In January, NuCedar Mills became the first company to manufacture and ship clapboard siding milled from solid boards of cellular PVC, a material that already has been embraced by builders and architects for trim, rake, corner board, and molding. (Clapboard is the term for overlapped siding planks rather than stacked planks.)

This fully recyclable, specially formulated cellular PVC sheet, made in part from recycled content, is manufactured in India by Jain Irrigation Systems. The breakthrough coating formula provided by Sherwin-Williams enables factory painting with a highly durable, heat-repelling coating that allows application of mid-tones and deep, saturated colors to vinyl. Milling, coating, packaging and shipping are performed at NuCedar Mills' 53,000-square-foot, state-of-the-art manufacturing facility in Massachusetts.

Dark Colors, Bright Future

Both inside and outside the home, color has become an increasingly important amenity to consumers—one they are willing to pay for.

The need for a more advanced coating formulation to provide a historically correct palette of colors—and for a highly durable coating that could be applied on a very high-speed production line—prompted NuCedar to contact Sherwin-Williams. Over the next year the two companies embarked on a close collaboration, which has resulted in a next-generation Polane® polyurethane enamel coating, Polane Solar Reflective Polyurethane Enamel.

NuCedar's Smooth and CedarGrain™ Classic Clapboard® is available with the factory-applied finish in 22 standard colors and 1,400 custom colors.

Global Journey

But color is just part of the story. The teamwork and innovation required to develop a new kind of siding took Loper and Sears to India to source a plentiful supply of specially formulated cellular PVC sheet.

In addition to a stable supply of cellular PVC sheet, Loper understood the critical need to develop a highly automated production process to keep costs as low as possible in the intensely competitive market for residential and commercial building materials, where NuCedar has staked out the custom home market as its niche.

Quick Changes

In NuCedar's high-tech paint kitchen, 12 colors of paint are kept under pressure and hard-wired to a manifold, allowing fast, computerized color change.

Finished siding is stacked face to face without slipsheets because the durable coating doesn't become scratched in transport. Once on the job, the 4-inch, 6-inch and 8-inch boards available in 12-foot and 16-foot options can be quickly installed without special tools, using an Interlocking Matrix™ System. The clapboard, applied over a moisture-managed house wrap, is inserted into the trim to create a historically correct, butted appearance.

According to NuCedar Mills, the system installs as easily as vinyl with the authentic look of natural cedar and has been wind-tested to 225 mph, using aluminum or stainless steel nails, with no damage. The company offers a complete siding system with a wide range of trim features and style accents, including several molding profiles.

Loper is particularly proud that there is no waste in the manufacturing process. "All scrap is pulverized into powder and sold back to makers of cellular PVC."

For more information, an expanded version of this article is available on our website: www.UltimateHomeDesign.com. UHD

Missing Ingredient Gives Thermal Barrier Coating The Green Light

Finding a cost-effective thermal barrier that is durable and friendly to the environment may seem like a search for the Holy Grail. But some commercial builders, school districts, and property owners have discovered that all good things are possible—if you have the missing ingredient. Exactly what that ingredient is no one will reveal, sorry to say, because it is contained in a proprietary formula developed by a Canadian firm determined to protect its secret.

Fortunately, that hasn't stopped tradespeople from popping the lid on this product's remarkable results: Reduced labor and energy costs; effective prevention of heat loss or gain; Green report card unsurpassed in this product group; and ideal for extreme coastal or desert weather conditions—all of which are made possible by Cerylium™, the mystery guest in the formulation for Ceramic InsulCoat exterior wall and roof products by Envirocoatings.

"There are secrets that they won't let anyone know," said Bruce Atherton, owner of Arrow Painting Ltd., in Victoria, British Columbia. "But people can see the difference. It doesn't crack or peel, it retains its colors—it has so many advantages to it."

Atherton, a painting contractor for 25 years, knows that a thermal barrier is essential for reducing energy costs for the commercial buildings he services. Often that barrier is created using fiberglass insulation. Yet an even greater degree of protection is possible when an Envirocoatings product is applied to the roof of a building already insulated with fiberglass. And the improvement can be measured in lower energy costs. "You just put it on your roof. It's great. There's a big difference."

According to Atherton, a helicopter hangar at a local airport, a new apartment complex, and even miles of chicken coops have all benefited from the roof insulation product that can be applied on metal or wood. One key benefit is InsulCoat's ability to expand 160 percent of the original surface size as weather conditions change, an especially important factor when covering a flat roof. This elastic characteristic prevents the barrier from cracking or peeling. And while the price is higher than the cost of a bucket of paint, it will endure nearly five years longer. "Farmers are painting all the roofs with this product to keep the chickens happy. A happier chicken lays more eggs. It must pay off in the long run."

Keeping warmth in is the goal for cold coastal areas. But InsulCoat is also effective when dealing with the opposite problem—keeping scorching heat at bay. Envirocoatings has passed California Energy Commission's stringent Title 24 testing, otherwise known as the cool roof initiative. The testing included accelerated weathering, tensile strength, and flexibility at temperatures as low as zero degrees Fahrenheit, as well as breathability tests.

Passing the test was actually a formality: InsulCoat standards had already surpassed state requirements. But the milestone is important, Envirocoatings officials say, because some roofing products now on the market have earned the seal of approval from the state's Cool Roof Rating Council (CRRC). But those same products are not yet Title 24 compliant. Also, in 2006 California tightened its limits on Volatile Organic Compound (VOC) levels. While the change caused problems for various painting manufacturers, who were forced to reformulate some products, Ceramic InsulCoat products already met the new standards.

Atherton said he is getting more requests for the products, as business people become more aware of the environmental benefits. In fact, proof that interest in the Green movement is growing can be seen in the advertisements for new commercial projects now circulating in the community. Selling points now include "living Green" and slogans such as, "Green is the color of the money you save" when embracing energy conservation.

"It's a step in the right direction. They're educating themselves. It makes it easier for me. I don't have to explain so much," Atherton said.

While the lower toxicity is a boon to many businesses, schools and residential complexes, it is also quality-of-life improvement for contractors like Atherton. When he began Arrow Painting with a small van and a little dog for companionship, Atherton was forced to work with life-threatening lead-based products. Now, 25 years later, working with his two adult sons, he realizes how much times have changed.

"My sons are much more aware than I was. They don't want to get their hands in anything that's toxic. And they wear gloves when they use caulking or enamel," he said, adding, "They would have thought about the dangers before entering the business if not for Envirocoatings breakthroughs." The products are 100 percent acrylic in solution, water based, and do not include formaldehyde or other chemicals that may cause cancer. And no special ventilation is necessary when using the coatings.

InsulCoat Paint Products From Envirocoatings Are 100 Percent Water-Based Acrylic In Solution, And Do Not Include Formaldehyde Or Other Chemicals That May Cause Cancer.

Atherton said the Heritage Foundation in Victoria has also given its nod of approval for the Envirocoatings products because they have helped preserve many historic brick buildings. These buildings typically suffer from surface and mortar erosion and fading color due to heavy annual rainfall. And they lack a thermal barrier. Atherton said the clear InsulCoat is ideal because it "brings out the colors in the bricks and seals the bricks against any water." Also, if bricks literally have begun to rot, creating an unattractive outer face, the thermal barrier products can be covered with a coat of paint.

InsulCoat products are a two-coat system. The first coat dries to the touch in 15-30 minutes. The second coat can be applied two hours later. Other products may require up to 24 hours drying time. The short and simple application process translates into big savings in labor costs. Also, the product can be tinted any color for exterior walls. The roof products, however, are limited to lighter tints because those colors help reflect light, not absorb heat—a key factor in reducing heat buildup on roofs.

The fading factor is also reduced by InsulCoat, which can maintain a bright red, for example, for five to seven years. Typical exterior coatings must be repainted every eight months in Victoria, according to Atherton, who says the quality difference is obvious to local residents. "They look at a job, one house next to another, and it's like night and day. The appearance of it is ten times better than latex. You can tell it right away."

The environmentally astute products also work well on stucco because they go on thick and permeate surfaces. This has made the product popular in Victoria, as well as in the Southwestern United States.

"Our products work just as well at 40 degrees below zero in the Northwest territories of Canada as they do in Phoenix in the middle of the summer," said Roland Langset, CEO and president of Prima Developments Ltd., which owns Envirocoatings. "It's a year-round thermal barrier. It'll keep you warm in the winter and cool in the summer."

For more information about Envirocoatings visit http://www.envirocoatings.com UHD

The Author

Douglas Glenn Clark is a free-lance writer based in Los Angeles, California.

25 Homes Were Built Over The Course Of 2007, Beginning In Baltimore, MD And Ending In The Company's Hometown Headquarters Of Bayport, MN.

Andersen Completes 100-Home Project With Habitat For Humanity

One-hundred families across the country have new homes thanks to a five-year initiative by Andersen Corporation. The company launched its 100 Years/100 Homes project in 2003 – the year of the company's centennial. The announcement came at the 2003 International Builder's Show in Las Vegas. Construction began in June of that year. It was completed at the end of 2007 with construction of the one-hundredth home in Bayport, Minn.

History

Reaching a 100-year milestone is a significant accomplishment for businesses today. Andersen has a long history of commitment to the community and wanted to mark this significant milestone with an equally significant community service project. The Andersen-related foundations collectively donated $5 million to fund the construction of 100 Habitat for Humanity homes and the company donated all the windows. But, the biggest commitment came at the hands of the Andersen employees who volunteered to build the homes. Construction began in June, 2003 in St. Paul, Minn. with the building of five homes. More than 100 employees "blitz framed" those first homes in just five days. The company went on to build 13 homes in 2003. Building continued to ramp up and between 2004 and 2006 Andersen sponsored and built 60 homes in 17 communities throughout the United States and Canada. Home sites included Luray, Virginia; London, Ontario; San Francisco, California; and Denver, Colorado; to name a few.

One significant event during these years was the devastating impact of Hurricane Katrina. In response, Andersen was able to partner with Habitat in the recovery period following the disaster, funding 15 Habitat homes in the New Orleans area. Much of the construction actually began in Minneapolis and then was shipped via barges on the Mississippi River to their new homes in New Orleans.

Last year was the final year of the project, with 25 homes built over the course of 2007, beginning in Baltimore, Maryland and ending in the company's hometown headquarters of Bayport, Minnesota in November. In all, Andersen employees donated over 50,000 volunteer hours and hammered just over 5.5 million nails into the 100 homes in 25 communities across North America.

Andersen has a long, rich history of giving back to the community. Affordable housing is a primary focus of their philanthropic efforts. In addition, they support a wide variety of nonprofit organizations in the communities in which their employees live and work.

Andersen Corporation is the largest window and door manufacturer in North America, and the Andersen® brand is the most-recognized and most-used brand in the window and patio door industry. The privately owned company was founded in 1903 and has a strong history of commitment to its business partners, employees, community, and environmental stewardship. Andersen employs more than 13,000 people and markets products throughout North America and in South America, Europe, Asia and the Middle East. UHD

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2008 The New American Home®

Gary Reber

A Showcase Of Green Building Technologies

The latest incarnation of The New American Home® (TNAH) was the official featured home sponsored by the National Association of Home Builders (NAHB) at the 2008 International Builders' Show held in Orlando, Florida from February 13 to 16. This year's showcase is the most energy-efficient design in the history of the program and is the first home to be certified under the new NAHB National Green Building Program.

Over the past several years, The New American Home leaders have worked with representatives from the federal Building America and ENERGY STAR® programs, as well as the Florida Green Building Program to incorporate energy- and resource-efficient products and materials into this important show home. This year's home celebrates the 25th Anniversary for The New American Home.

Each year, since 1984, the NAHB builds a house in the host city of its International Builders' Show convention to demonstrate "state-of-the-art" home-building techniques, the use of innovative building materials, and leading-edge design, providing production home builders with an example for producing more energy-efficient, durable homes without sacrificing style. The mission is to show that "housing performance" can be incorporated into the most simple or most complex homes, and that it is equally as important as aesthetics.

The home is co-sponsored by The National Council of the Housing Industry (NCHI) and *Builder* magazine. The majority of features and innovations in the home are accessible to both builders and homeowners for integration into their own homes. The home project teams up industry experts for the purpose of designing, building, and monitoring a demonstration home that has been equipped with the latest marketable home technologies and products. The NCHI, a committee of the NAHB chartered in 1964, is comprised of nationally known, trusted, and recognized product and service suppliers to the housing industry who are committed partners. The design, construction, and amenities are market driven, and showcase the latest in innovative products for the future of home building.

The design, construction, and amenities showcased are contributed by NCHI members, making The New American Home a highly visible in-kind sponsorship program. For a complete listing of New American Homes built from 1984 to 2007 and under construction in 2008, and a list of NCHI members' participation in The New American Home by year, visit "Facts And History" on www.tnah.com.

The 6,725-square-foot Plantation-style New American Home is located in the exclusive Water's Edge section of Lake Nona, a gated, 11-lot parcel reserve for custom-built waterfront homes. The home is near a lakefront ark, boat dock, and other custom-built homes. The subdivision is one of the most inviting private golf and country club communities in the nation.

A quartet of Orlando-area professionals collaborated on the project under the direction of NAHB's National Council of the Housing Industry/Leading Suppliers of NAHB and co-sponsor *Builder* magazine. The Sater Group refined the design concept from the builder, Robertson Homes,

Synopsis

- ***The design, construction, and amenities are market driven, and showcase the latest in innovative products for the future of home building.***

- ***The low-voltage systems in the residence were designed to demonstrate the latest technology available to home builders and homeowners that enhances the livability and eases the complexities of modern home control.***

- ***Combined with new ideas for universal design, energy efficiency, and technology, the home's design and floor plan brings to life the idea of a lifestyle that today's home-owners demand.***

- ***The home uses approximately 73 percent less energy for heating and cooling and 54 percent less energy for water heating, compared to a house of comparable size in a hot and humid climate region.***

International Builders' Show

Each year for the International Builders' Show, The New American Home® transforms from a graded plot into a truly unique home in style and function. The one characteristic shared by each home, since the U.S. Department of Energy's (DOE) Building America Program has participated in the project, is energy efficiency. This year's home achieves high levels of efficiency through advanced HVAC equipment, careful installation of insulation and air sealing, high-performance windows, and a zone-control system. Among its interesting features is a hot water system that taps energy from solar thermal panels. The home's overall achievements in energy use are 73 percent reduction in heating and cooling and 54 percent reduction in hot water, when compared to a similar home.

A Strong Energy Portfolio For A Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

Research And Development Of Buildings

Our nation's buildings consume more energy than any other sector of the U.S. economy, including transportation and industry. Fortunately, the opportunity to reduce building energy use—and the associated environmental impacts— is significant.

DOE's Building Technologies Program works to improve the energy efficiency of our nation's buildings through innovative new technologies and better building practices. The program focuses on two key areas:

- Emerging Technologies
  Research and development of the next generation of energy-efficient components, materials, and equipment
- Technology Integration
  Integration of new technologies with innovative building methods to optimize building performance and savings

For more information, contact EERE Information Center at 877 337 3463 (www.eere.energy.gov).

Primary Project Goals:

- Build a high-profile show home for the International Builders' Show by implementing Building America strategies to conserve energy and materials
- Introduce production builders to advanced HVAC strategies and advanced insulation and airtightness detail

Specifications:

- Pre-cast, insulated structural concrete wall system
- Three high-efficiency heating and cooling units; heat pumps 9.0 HSPF
- Air-conditioning systems between 15 and 17.8 SEER
- Air-distribution system entirely within conditioned space
- Low-emissivity impact-resistant windows; U-value = 0.33, SHGC = 0.32
- Four-foot overhangs over most south- and west-facing windows
- Natural gas-fueled instantaneous water heaters; EF = 0.82
- 2.4-KW solar photovoltaic system
- 49 percent whole-house energy savings (58 percent with PV system contribution)

while Robb & Stucky provided the interior design and furnishings, while Outdoor Productions provided landscaping. Several NCHI/Leading Suppliers of NAHB members provided building products and systems, from the windows and appliances, to the insulation and structured wiring, for the project.

Distinguished by columned portico along its symmetrical front elevation and H-shaped, the two-story floor plan opens to generous outdoor areas overlooking Lake Nona. Among the myriad spaces within the house, the plan offers a universal designed family suite on the main level to accommodate an elderly parent or short- and long-term guests. However, entrance to the home's interior spaces are not designed with universal design consideration. The floor plan also offers ample private and public areas for family gatherings, including a first floor master retreat occupying one entire side of the footprint, a wide-open kitchen/nook/leisure room that opens on two sides to a covered loggia along the rear elevation, and an upstairs club room that combines home theatre-quality entertainment, games, and other activities—as well as access to a private balcony and sundeck—into one generous space. All second-level rooms feature generous balconies. Formal spaces include a dedicated dining room, grand salon, and library/study to serve the owners' entertainment needs. The house also enjoys a pair of attached, two-car garages facing into a motor court, one of which leads to a secondary entrance for efficient access to the kitchen and family suite.

The home's combined 2,950 square feet of covered outdoor spaces feature a Alfresco Outdoor Kitchen and, beyond it, a solana (or salon) sitting area, complete with a fireplace and arched openings to the lake view, and a landscaped pool and spa. The owners will be able to enjoy the loggia from almost anywhere on the main level, with access to the space from the master retreat, library/study, powder room (serving also as a convenient pool bath), and leisure room. A set of full-panel, full-height sliding glass doors separate the indoors and outdoors.

The New American Home is constructed using a systems-engineering approach that transforms the show home from a graded plot into a truly unique home in style and function. Each component of the home was selected and integrated into the project through a systems approach of designing, testing, and redesigning. All of the home's components work together in harmony to achieve maximum performance. This year's home achieves high levels of efficiency through advanced HVAC equipment, careful installation of insulation, air sealing, and high-performance windows.

To ensure energy efficiency and innovation, two Building America teams worked closely with NCHI. Integrated Building and Construction Solutions (IBACOS) provided design and engineering support, and the Industrial Housing Partnership provided performance testing. As a result, the home's two stories are conditioned by three strategically placed, high-performance HVAC systems. The heat pumps have a maximum of 16.6 seasonal energy-efficiency ratio (SEER) performance, and each unit and its associated ductwork are within conditioned space. A solar thermal hot water system serves half

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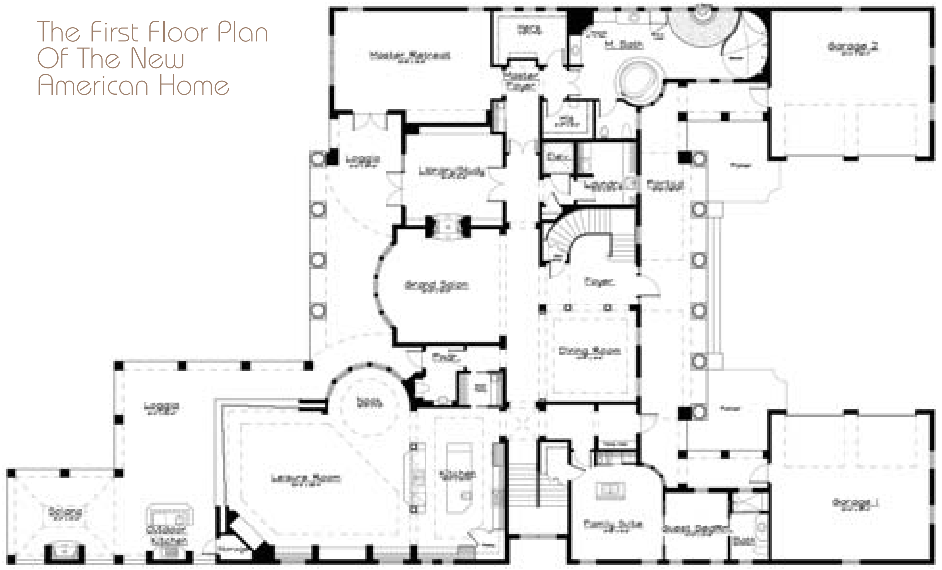
the house, and tankless water heaters, which are fueled by natural gas, serve the other half. These further add to the home's efficiency.

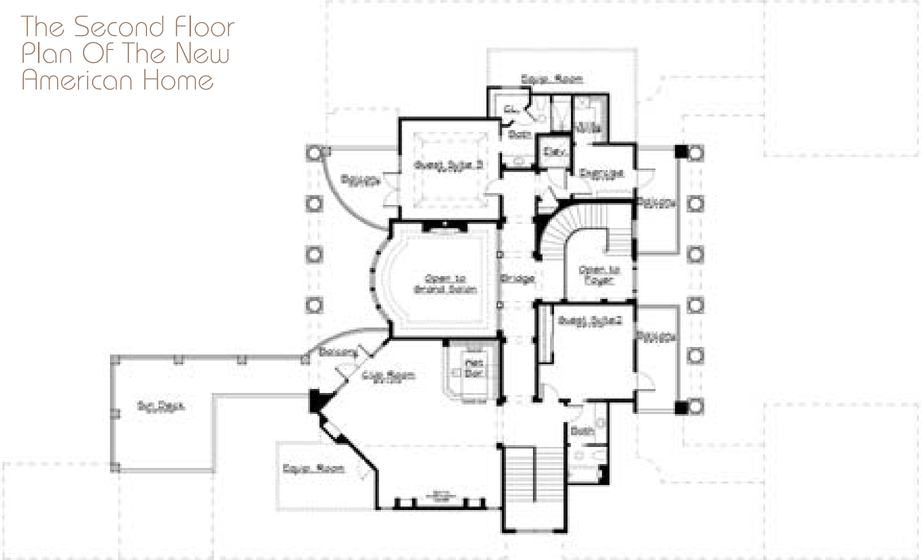
Other prominent features contribute to energy efficiency and durability. Exterior walls were constructed with autoclaved, aerated concrete blocks (R-8); R-4 rigid foam insulation was placed continuously on the interior, and R-5.7 insulation was integrated into the exterior finish system. The attic is unvented, sealed, and indirectly conditioned. A thermal and air barrier was constructed at the underside of roof sheathing with R-20 spray foam insulation. These combined features result in 42 percent whole-house energy savings.

The energy-efficient features in The New American Home can be used in homes at any price with equivalent energy savings. Energy efficiency is among the top benefits of The New American Home 2008. The home uses approximately 62 percent less energy for heating and cooling and 57 percent less energy for water heating compared to a house of comparable size in a hot and humid climate zone. The home achieves high levels of efficiency through advanced HVAC equipment, careful installation of insulation and air sealing, and high-performance hot water equipment. All its components work together to achieve maximum performance. For example, the home's thermal qualities are achieved by the right insulation materials and specifications, and the ductwork was designed to fit inside the conditioned space.

The First Floor Plan Of The New American Home



The Second Floor Plan Of The New American Home



Thermal Shell

The 2008 New American Home features residential automaton and home control for all low-voltage systems provided by Schneider Electric (www.us.schneider-electric.com) and featuring Square D products throughout. The low-voltage systems were designed to demonstrate the latest technology available to home builders and homeowners that enhances the livability and eases the complexities of modern home control. The home is intended to showcase the latest products in the industry and set a benchmark for low-voltage design techniques.

Among the installed systems are structured wiring, security/life-safety, multi-zone audio, home theatre, lighting control, and flat panel TV displays. Structured wiring refers to all low-voltage wiring in the walls that provides audio, video, phone, security, and network access, as well as the components that link the wiring to its destination or termination points.

The 2008 New American Home is partly universal design compliant and is designated to be ENERGY STAR® certified, and also certified as a "green" or environmentally friendly home under standards set forth by the Florida Green Building Coalition, an organization dedicated to eco-friendly construction practices.

New Realities For Boomers

The first wave of America's 76 million-plus "baby boomers" turned 60 a couple of years ago. As this group heads into retirement, they're having a profound effect

Building America's Systems-Engineering Approach

Building America (www.buildingamerica.gov) is a research program of the U.S. Department of Energy (DOE) with the goal of designing and building zero-energy-cost homes. Building America's systems-engineered approach unite s segments of the building industry that have traditionally worked independently of one another. Building America forms teams of architects, engineers, builders, equipment manufacturers, material suppliers, community planners, mortgage lenders, and contractor trades.

The concept is simple: systems-engineering can make America's new homes cost effective to build and energy efficient to live in. Energy consumption of new houses can be reduced by as much as 50 percent with little or no impact on the cost of construction.

To reach this goal, Building America teams work to produce homes that incorporate energy- and material-saving strategies from design through construction.

First, teams analyze and select cost-effective strategies for improving home performance. Next, teams evaluate design, business, and construction practices within individual builder partnerships to identify cost savings.

Cost savings can then be reinvested to improve energy performance and product quality. For example, a design that incorporates new techniques for tightening the building envelope may enable builders to install smaller, less expensive heating and cooling systems. The savings generated in this process can then be reinvested in high-performance windows to further reduce energy use and costs.

The "pilot" or "test" home is the field application of solution design. Teams build prototype homes according to strategic design, test each system for efficiency, and then make any necessary changes to increase efficiency and cost effectiveness. Before additional homes are built, these changes are incorporated into the design. This process of analysis, field implementation, re-analysis, and design alternation facilitates ultimate home performance, once a design is ready for use in production or community-scale housing.

Understanding the interaction between each component in the home is paramount to the systems-engineering approach. Throughout design and construction, the relationship between building site, envelope, mechanical systems, and other factors is carefully considered. Recognizing that features of one component can dramatically affect the performance of others enables Building America teams to engineer energy-saving strategies at little or no extra cost.

Advantages To The Homeowner
- Increases quality without increasing cost
- Increases comfort and performance
- Reduces utility bills
- Allows greater financing options

Advantages To The Builder
- Reduces construction costs
- Improves productivity
- Improves building performance
- Reduces callback and warranty problems
- Allows innovative financing as a result of predictably lower utility bills
- Gives builder a competitive advantage

Systems Engineering Cost Saving Trade-offs
- Advanced framing systems
- Tightly sealed house envelopes
- Shorter, less costly ductwork
- Engineered and planned infrastructure
- Smaller, less expensive mechanical systems
- Modular construction

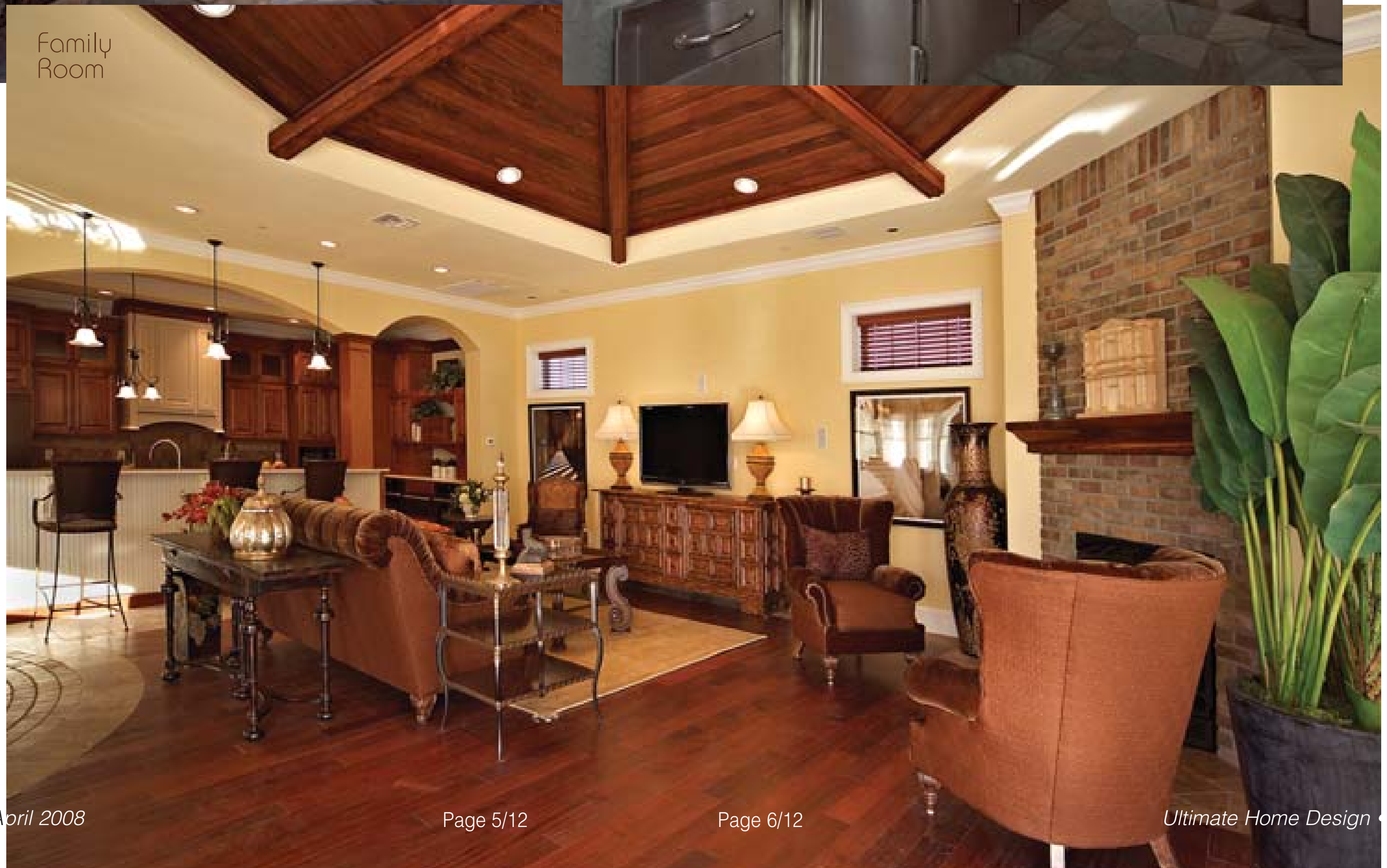
Percentage Of Energy Reduction
- 64 percent reduction in heating and cooling energy use
- 55 percent reduction in heating energy use
- 57 percent reduction in hot water energy use

Bedroom View

office

Dining Room

Outdoor Kitchen


Family Room

Performance Features

Thermal Shell
- Exterior walls are autoclaved, aerated concrete blocks (R-8) with R-4 rigid foam insulation on interior and R-5.7 rigid foam insulation system on exterior
- The attic is unvented and sealed airtight
- A thermal air barrier was constructed at the underside of the roof sheeting and insulated in R-20 with spray foam insulation

Airtightness
- Penetrations and openings sealed to achieve 0.30 natural air changes
- Aerated concrete blocks and exterior insulation system create airtight exterior walls
- Spray foam insulation creates airtight attic space

Moisture Control
- Windows and doors are effectively flashed to shed water
- Flashing is integrated with the drainage lane system to increase durability
- The wall system consists of expanded polystyrene insulation, aerated concrete blocks, and extruded polystyrene insulation to control moisture diffusion from the outside to the living space

HVAC
- Three air-source heat pumps—16.6 SEER and 8.5 HSPF—serve the home
- All ductwork is insulated and airtight within conditioned space
- Outdoor air is supplied by a mechanical ventilation system

Hot Water
- Half the home is served by a solar thermal water heater with electric backup
- Propane-fueled, instantaneous water heaters (EF=0.82) minimize piping and reduce standby losses

Electrical
- ENERGY STAR®-rated dishwasher, clothes washer, and refrigerator

Landscape
- Drought-tolerant and native plants like dwarf hollies, large-canopy trees like native oaks and magnolias that provide extra shade, and natural pine straw mulch to reduce evaporation and the need for watering

Other Green Features
- Adjacent wildlife habitat is maintained
- Irrigation system uses a rain sensor and separate zones for turf and other plantings, allowing different watering schedules
- Manufactured floor trusses reduce the quantity of materials and waste
- Pre-finished wood flooring reduces the quantity of materials used and wasted, and enhances indoor environmental quality
- Humidistat-controlled bathroom vent fans manage moisture effectively
- Direct-vent, sealed-combustion fireplaces limit indoor pollutants
- Covered entryways enhance durability and reduce maintenance
- Appliances are water-conserving and ENERGY STAR-rated
- The pool uses salt rather than chlorine
- Exterior landscape lighting is low-voltage
- Use of low-VOC (volatile organic compound) paints

For information contact:
- Robertson Homes—407 892 8537 (www.robertsonhomes.us)
- National Council of the Housing Industry—800 368 5242 x8519 (www.nahb.org)
- IBACOS Consortium—800 611 7052 (www.ibacos.com)
- Industrial Housing Partnership (IHP)—407 384 2048

Bedroom

Bathroom

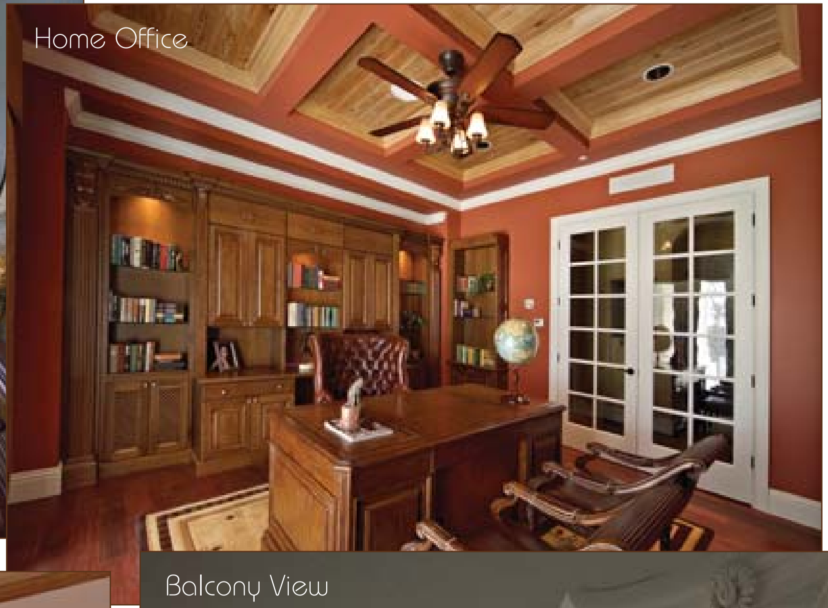
Casual Dining

Kitchen

Bedroom

DESIGN
optimum performance home

Bedroom


Home Office

Casual Dining

Balcony View

Outdoor Space

NAHB National Green Building Program

For more than 30 years, members of the National Association of Home Builders have worked to make homes more energy- and resource efficient. As builders experimented with innovative construction methods and as suppliers and manufacturers introduced efficient new products, a quiet revolution began to unfold.

That revolution came to be known as the green building movement. NAHB green builders define this process as ***incorporating environmental considerations and resource efficiency into every step of the home building and land development process to minimize environmental impact***.

On February 14, 2008 the NAHB National Green Building Program was introduced so all builders, everywhere, can build green in a way that's market-driven and affordable. The New American Home is the first show home to be certified by the national program. The builder and designer used the convenient online scoring tool at www.nahbgreen.org, and the results were verified by third-party inspectors.

National certification provides buyers with assurance that their home has been inspected by local experts who understand how the seven components of green building work together to create a truly green home in the most cost-effective way.

The program is based on the NAHB Model Green Home Building Guidelines, and in March 2008 builders will be able to choose to certify homes based on the Guidelines or the National Green Building Standard, the first and only consensus-based green standard for single-family and multi-family homes, developments and residential remodeling approved by the American National Standards Institute. With both the Guidelines and the standard:

- ***Energy efficiency.*** The builder carefully sealed all the ducts, installed the right insulation, and calculated appropriate HVAC equipment needs. The home features power-sipping appliances and fixtures.
- ***Water efficiency.*** Low-flow toilets, aerated faucets, and efficient washing machines inside; drought-tolerant landscaping outside.
- ***Resource efficiency.*** Recycled building materials, thoughtful waste-management techniques, and durable construction are all signs that the builder limits the use of precious resources.
- ***Lot and site development.*** The home is protected from prevailing winds and takes advantage of the sun's light and energy. The lot's natural features are preserved.
- ***Indoor environmental quality*** means that the air circulates well throughout the home, and moisture and potential pollutants are minimized or sealed off from the house.
- A home's ***global impact*** is measured by whether the building materials are emitting harmful chemicals, and whether they came from local sources or were shipped from afar.
- Finally, ***homeowner education*** is a key part of the green building process. The correct operation and maintenance of your new home is essential to keeping it green.

Go to **www.nahbgreen.org**, the home of the NAHB National Green Building Program, to find:

- An interactive scoring tool to choose the green features that are appropriate for your climate, region, and market
- A nationwide directory of certified green-built homes
- A list of Certified Green Professionals™
- A directory of state and local green home building programs
- Tools and resources for consumers, builders, program administrators, and policy makers.

Visit www.nahbgreen.org to learn more!

on the housing market, and their needs and preferences are shaping the way that developers, architects, and architectural designers are building homes.

Baby boomers have a different view of age-restricted housing than their parents' generation did. A new emphasis on active living has made communities with recreational amenities like golf, biking, fitness centers, and nature trails more popular. More and more boomers, especially at the younger end of the spectrum, are choosing multi-generational communities that markets to buyers of all ages, and homes that will accommodate their needs as they move through their child-raising years and into "the next stage" of their lives, which may or may not include retirement. Many of these families will have the added demand of providing for adult children and grandchildren returning to the nest and/or accessible housing for aging parents. That plays into the recent trend toward larger retirement homes and the application of universal design principles to architectural plans.

The New American Home anticipates and plans for these changing realities for boomers. The home—with ThyssenKrupp Castle elevator—was designed to be almost 100 percent wheelchair accessible (except for the entrances), so it will be suitable for the resident as he or she ages or brings an elderly parent into the home. A fully equipped family suite on the main level is designed to accommodate a guest, live-in housekeeper or care giver, returning children, or senior housing for an elderly parent, or the homeowners in their twilight years.

Conclusion

Once again, The 2008 New American Home is exemplary of large-home architecture incorporating new concepts, materials, and techniques that improve energy efficiency and home performance applicable to homes in any size or price range.

For more information, visit www.builderonline.com/show-homes/the-new-american-home-2008.aspx UHD

> "The New American Home's mission is to show that 'housing performance' can be incorporated into the most simple or most complex homes, and that it's equally as important as aesthetics."

2008 The New American Home® Partners In Building

About The Author

Gary Reber is the President of Ultimate Home Design, Inc. and the founding Editor-In-Chief and Publisher of *Ultimate Home Design* magazine. His diverse background in several fields includes an undergraduate, graduate, and postgraduate university education in architecture, community planning, and economic development planning. For years he was a consultant on community and economic development planning. For the past 15 years he has been an editor and publisher of magazines in the consumer electronics field. Gary can be reached at 951 676 4914 or gary@ultimatehomedesign.com.

Acknowledgments

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U.S. Department of Energy's National Renewable Energy Laboratory

Credits

Since 1984, The New American Home® has brought together the world's leading suppliers and the best of consultants and valued trade partners to assist the design-build team. This year's contributors are recognized as follows:

Builder: Robertson Homes, Inc.
Residential Designer: The Sater Group, Inc.
Merchandising: Robb & Stucky Interiors
Interior Design: Ron Nowfel, IDS Associate
Landscape Architect: W. Patrick Trefz, ASLA

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Formica Corporation
Fortune Brands Home Products
- Simonton Windows
- Dixie Pacific Mfg. Company
Gama/Vent Free Gas Product
- Lennox Hearth Products
Hearth, Patio & Barbecue Association
- Alfresco Open Air Culinary Systems
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- Lennox Fireplaces
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- Kohler Power
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Masonite International
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- Four Seasons Gas Services
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Outside Productions, Inc.
Palmer Electric Company
Paversystems
Plaza Doors
Rinker Materials
Robertson Homes, Inc.
Schlage
Simonton Windows
Southern Cypress Manufacturers Assoc.
Stairworld
Travis Industries
Tyco Thermal Controls
V-Tech, Inc.
Wise Landscaping

Ultimate
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Ultimate
Universal Design

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Energy Efficiency

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NCHI	Member Product
Armstrong World Industries	Wood Flooring
Bose Corporation	Home Theatre And Music Systems
Broan/Nutone LLC	Vac. System/Exh. Fans/Door Chime/Ironing Ctr.
Closet Factory	Closet Systems
Copper Development Association, Inc.	Copper Material - Berger Building Products, Inc.
Dal-Tile Corporation	Floor Tile
Dell Inc./Home And Small Business	Computers/Printers/Flat Screen TVs
Dryvit Systems, Inc.	Exterior Insulation And Finish Systems (Eifs)
Formica Corporation	Countertops - Stone Natural Quartz Surfacing
Fortune Brand Home Products (Moen)	Simonton Windows/Dixie Pacific Mfg. Columns
Gama/Vent Free Gas Alliance	Fireplaces/Tankless H2O Heaters/Propane Heaters
Hearth, Patio & Barbecue	Association Fireplaces/Outdoor Furniture/Outdoor Kitchen
Honeywell International	Security System
Icynene, Inc.	Soft Foam Insulation And Air Barrier System
In-Sink-Erator Division	Food Waste Disposer/Hot H2O Water System
Kohler Company	Plumbing Fixtures/Generator
Lennox Industries, Inc.	HVAC
Lubrizol/Flowguard Family Of Products	CPVC Pipe
Masonite International	Interior Door
ODL	Door Inserts And Tubular Sky Light
Oldcastle APG West	Stone Driveway Pavers
Overhead Garage Door Corp.	Garage Doors And Openers
Owens Corning Corporation	Cultured Brick/Stone
Phantom Mfg. (Int's) Ltd	Retractable Screens
Portland Cement Association	Support For Concrete Products - Rinker Materials/Aercon
Progress Lighting	Light Fixtures And Fans
Propane Education & Research Council	Propane Services - Heritage Propane / Four Seasons Gas Services
Riggs Workwear By Wrangler	Work Apparel
Rinnai Corporation	Tankless Hot Water Heaters
Schluter-Systems L.P.	Installation Shower And Floor Membrane Systems
Schneider Electric - Square D Co.	Electrical, Clipsal System, Juno Lighting
Sharp Electronics Corp. Of America	Microwave Drawer/Flat Screen TVs
Shaw Industries	Carpet
The Sherwin-Williams Co.	Paint
Simpson Strong-Tie., Co.	Connectors And Structural Hardware
Therma-Tru Doors	Exterior Doors
Thyssenkrupp Access	Castle Elevator Elevator
Timberlake Cabinet Co.	Kitchen And Built-in Cabinetry
Tyco Fire & Building Products	Fire Suppression System
Whirlpool Corporation	Jenn-Air And KitchenAid Appl/ Whirlpool And Maytag Ldry./ Gladiator Garage Works

Accompanying Contributors

1st Choice Structural Conn. & Fasteners	Supplier Of Simpson Ties
Aercon	AAC Block
Alfresco Open Air Culinary Systems	Outdoor Kitchen Grill And Appliances
Allsolar	Solar Hot Water Heater
American Door And Window Company	Installation Of Exterior Doors And ODL Inserts
Arcusstone Distributors Florida/Caribbean	Archstone Over Exterior Cupola Columns
Atlantic Premium Shutters	Window Shutters
Automated Sliding Doors Of FL, Inc.	Sliding Door Motors
B & Z Custom Sheet Metal, Inc.	Reduced Cost For Installation Of Copper Gutters
Berger Building Products, Inc.	Rain Gutters & Downspouts
Bluworld Of Water	Discount On Waterfall (Master Bathroom)
Brighthouse Networks	Cable, Internet And Phone Service
Castle Elevator	Elevator Installation CFM / Vermont Castings Fireplaces
City Of Orlando	Permitting
Cornerstone Pools	Reduced Price On Pool
Dixie Pacific Mfg. Co.	Reduced Price On Columns
Falcon Pest Control	Fire Stone Home Products Outdoor Furniture
First Commercial Bank Of Florida	Project Financing
FL Green Building Coalition (FGB)	Green Building Certification
Florida Solar Energy Center	Energy Consultant
Four Seasons Gas Services	Fireplace Installation
Gale Insulation	Installation - Insulation/Icynene
HD Supply Heritage Propane	Propane Lines And Tank
Inspiration Stone, Inc.	Foam Columns For Cupolas
Juno Lighting Group	Light Fixtures
Kempfer Sawmill, Inc.	Cypress Material
Kohler Power	Generator
Lennox Hearth Products	Fireplace
Monierlifetile	Roof Tile
NAHB Research Center	NAHB Green Build Certification
Old Castle Glass	Rain Glass Door Inserts For Master Bathroom
Outdoor Leisure By Desa	Outdoor Patio Heaters
Outside Productions, Inc.	Landscape Plans
Palmer Electric Company	Reduced Price On Electrical Installation
Paversystems	Driveway Concrete Pavers
Plaza Doors Rinker Materials	Reduced Price On Concrete
Schlage	Door Hardware
Simonton Windows	Windows
Southern Cypress Manufacturers Assoc.	Cypress Wood
Stairworld	Reduced Price On Stairs
Travis Industries	Indoor And Outdoor Fireplaces
Tyco Thermal Controls	Quicknet Floor Heating System
V-Tech, Inc.	Telephones
Wise Landscaping	Contributed Labor For Cleaning Up The Property

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The First Optimum Performance Home®

site and foundation preparation part XIV

Gary Reber

synopsis

- The particular site has been extremely difficult to excavate, due to the crumply nature of the sandy clay soil and the depth of dependable bedrock upon which to support the foundation, concrete slab, and the home's structure.
- The site's soil conditions have resulted in extensive additional excavation work, including digging trenches around and within the perimeter of each building in the three-building compound.
- A specially engineered Controlled Density Fill (CDF) concrete mix was designed to fill the voids and provide a strong, stabilized surface upon which to support the foundation footings.
- This first-stage concrete pour provided the necessary compaction strength to support the final-stage concrete-footing pour, upon which will be suspended the concrete slab.
- Prior to the granular mixture fill, the placement of the DELTA-MS UNDERSLAB membrane, the R-Control Perform Guard EPS, and the Uponor AQUAPEX-encased slab concrete pour, all the underground infrastructure for the home will be installed.

Introduction

After five years of design and plan development work, the first Optimum Performance Home® is now under construction.

This is the fourteenth article in the series documenting the design and construction of the first Optimum Performance Home. The project has been selected by the U.S. Green Building Council (USGBC) for inclusion in the national Leadership In Energy & Environmental Design (LEED®) for Homes pilot program, their new green build certification initiative, and the goal is Platinum certification.

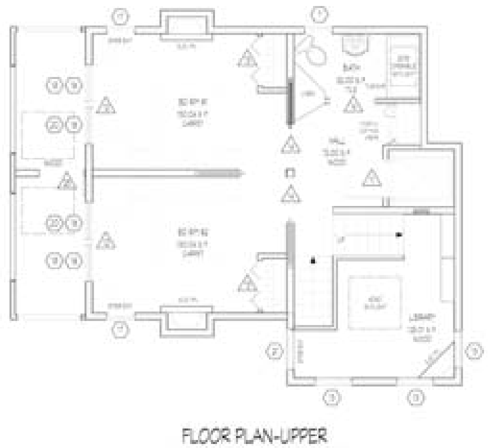
The home is being built at The Sea Ranch, located in Sonoma County, along the Northern California coastline of the Pacific Ocean, approximately 110 miles north of San Francisco.

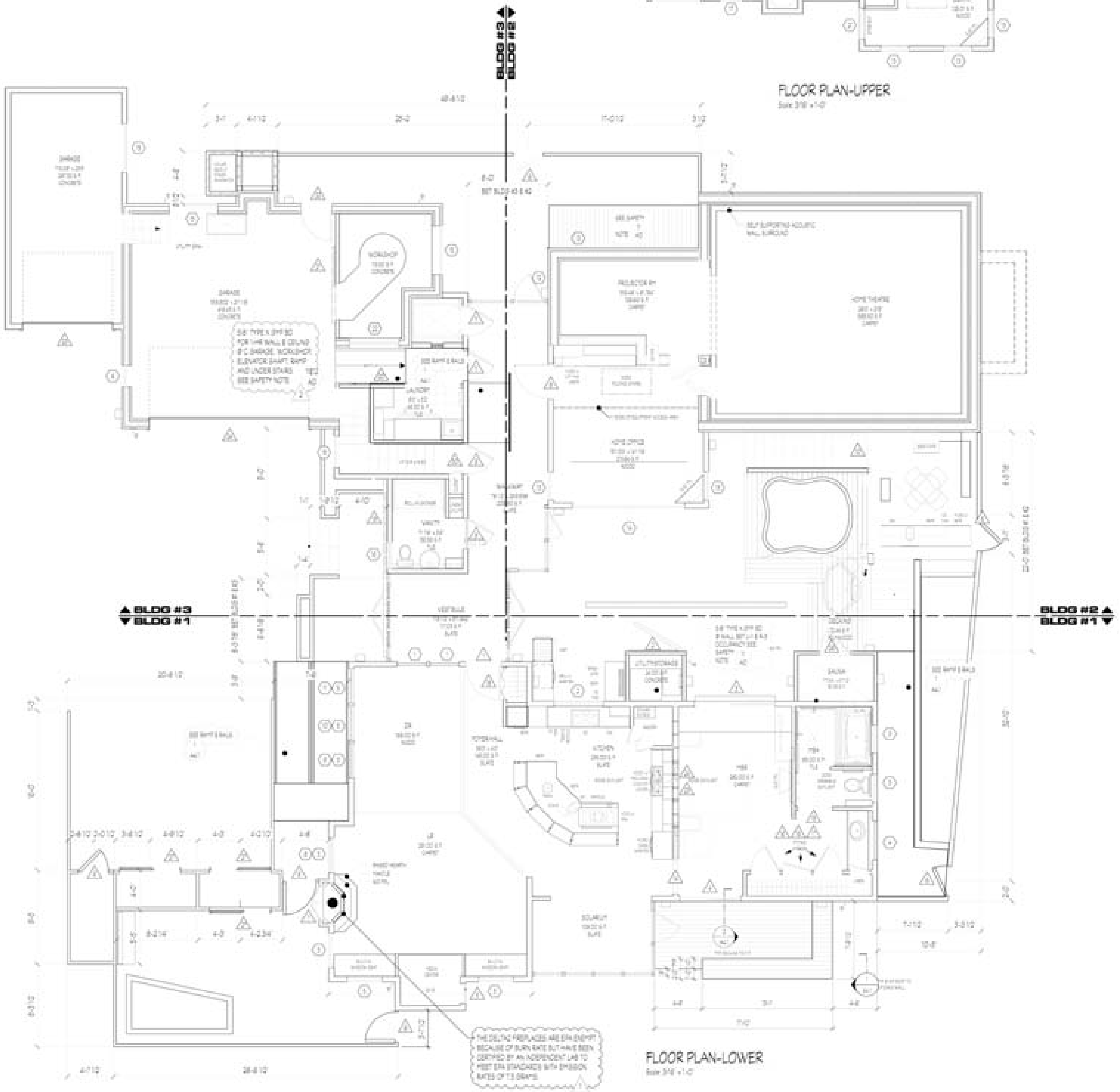
The showcase project is exemplary of the "Ultimate Home Design®" concept, which integrates age-friendly universal design with the best sustainable building practices, while exerting minimal impact on the natural environment. Universal design is the inclusive, non-discriminatory design of products, buildings, environments, and urban infrastructure; as well as information technologies that are accessible to and useable by (almost) all. With respect to home design, the idea is to design and build homes that have no physical barriers, thus sustaining people of all ages and all capabilities in a functional, comfortable, and aesthetic lifestyle.

A building-science systems approach to home building is the cornerstone of the project, with emphasis on the relationship between the home's components and the envelope they

For more information on this advertiser, circle 13

The First Optimum Performance Home® At The Sea Ranch





DESIGN
optimum performance home

The Sea Ranch

create. Also paramount is good stewardship—proper regard and respect for the rights of neighboring homeowners and the surrounding natural setting, and resource efficiency. The goal is to optimize occupant health, comfort, and safety; maximize energy efficiency and structural durability; and minimize environmental impact. In addition, the aim is toward providing a nurturing home environment to support independent living and sustainable lifestyles.

Part I of this case study series appeared in Issue 1, January/February 2006. The introductory article covered the project scope. Thereafter, each issue has contained a part of the continuing series by working through site planning and preparation; Low-Impact Development (LID); further refinements to the site plan and drainage design; The Sea Ranch Design Committee-approved architectural/structural and grading/drainage submittals with conditions that translated to clarifications on certain building components and material finishes; particular aspects of the home's mechanical plan; structural aspects of foundations, structural walls incorporating Insulating Concrete Forms (ICFs) and Structural Insulated Panels (SIPs), as well as roofing; the acoustical design of the dedicated Optimum Performance Home Theatre™ and rear-projection room; interior design approaches and materials; kitchen, bath, and home fixtures; universal design architecture; fire-risk mitigation; energy generation; and courtyard experience. "Breaking Ground" was the title of Part XIII, along with "Courtyard Experience."

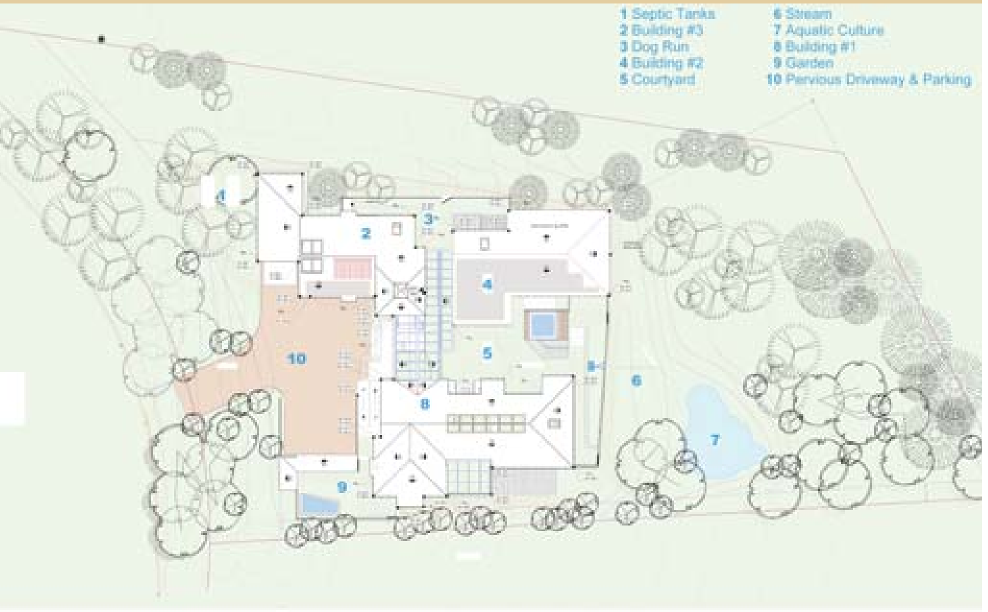
Commencement of construction with initial site grading, foundation, and mechanical infrastructure is now underway. Mother Nature has presented us with significant challenges in dealing with the unexpectedly extensive rainstorms throughout January and into mid-February that have drenched the site with over 30 inches. This created tons of mud on the site that had to be temporarily stored until needed for excavation fill and pad compaction.

Completion of the home is anticipated for November 2008. It is our intent to stage a full-on presentation at the November 19 to 21, 2008 U.S. Green Building Council's Greenbuild International Conference and Expo in Boston. Our presentation will reveal the step-by-step process for creating our first Optimum Performance Home—expected to be one of the highest rated, if not the highest, LEED for Homes Platinum residential home in the world!

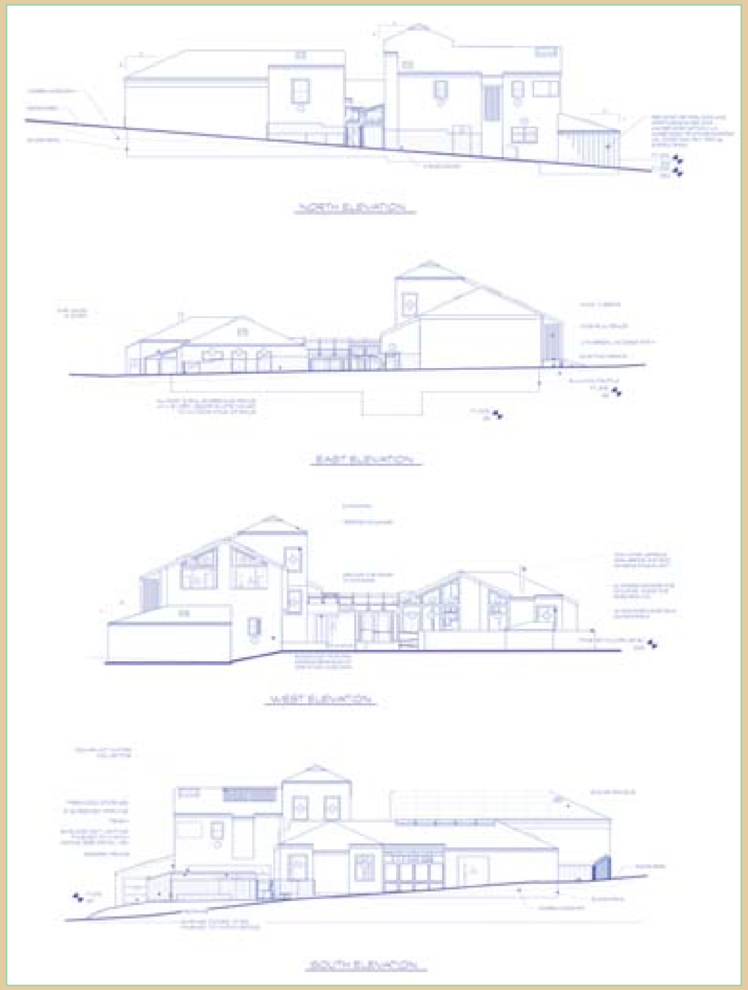
Construction Scheduling

Below is the breakdown of the initial site preparation and grading process and foundation work completed. An

> "The science of optimum performance homes concerns itself with building structures that use less energy, are quieter and more comfortable, have fewer problems with material degradation, provide clean air and water, and do less damage to the environment."



LANDSCAPE/SITE PLAN



The Elevations Of The Optimum Performance Home At The Sea Ranch

outline will be provided in Part XV for the next stage of construction above the slab consisting of the Amvic ICF (Insulating Concrete Form) and ThermaSAVE SIP (Structural Insulated Panel) walls and roofing.

Pre-Construction Start Meetings

Site Work

- Clear Lot Vegetation
- Lay Out House Pad
- Install Curtain Drain Around Pad
- Excavate Optimum Performance Home Theatre, Alcove, Wine Cellar
- Lay Out Footings
- Temporary Electrical Power
- Install iBeam Systems Time-Lapse Pro Construction Camera (See Part XIII)
- Activate Water Service
- Form Underground ICF Home Theatre, Alcove, And Wine Cellar Walls
- Prepare For In-Floor D-Box™ Technologies Custom Motion Platform In Home Theatre (see Part VII)
- Verify Foundations' Site Placement/Inspection
- Dig Large Pond, Septic And Cistern Areas
- Place Underground Cistern
- Place Underground Septic Tank
- Seal Pond With Seepage Control Environmental Soil Sealant (See Part II and III)
- Install Smart Drain Subsurface Horizontal Geotechnical Drains At The Pond (See Part III)
- Drill Geothermal Bore Holes, Place Piping And Grout (See Part V, XII, and XIII)
- Run Spunstrand HVAC Ducks For Home Theatre (See Part V)
- Install StormTech Infiltration Chambers (See Part II, III, and IV)

Foundations

- Dig Initial Stage Foundation Footings And Install French Drain
- Pour First Stage Engineered Controlled Density Fill (CDF) Concrete With Portland Cement and Headwaters Resources Fly Ash (See Part VI)
- Set Forms, Tie Rebar Steel, Hold Downs And Anchor Bolts
- Place Zurn Flo-Thru Trench Drain System Through Courtyard
- Form Foundations With Energy Edge
- Pour Final Stage Foundation Footing Concrete With Portland Cement, Headwaters Resources Fly Ash, and Kryton's KIM Admixture (See Part VI)
- Conduit Trenching For Uponor PEX Plumbing (See Part V and X)
- Run Plumbing Waste
- Run Underground Water Line From Pond To The Boat Garage For Fire Hose Connection (See Part XI)
- Install Gravel Around Plumbing
- Run Plumbing Conduit And Supply
- Run Electrical And Low-Voltage Conduit
- Lay out NuTone Central Vacuum System (See Part IX and X))
- Place Gravel and Sand Underslab
- Finalize Underslab Infrastructure and Zurn Flo-Thru Trench Drain
- Underslab Inspection

- Install AMF Corporation R-Control Perform Guard EPS Insulation
- Install Cosella-Dörkin DELTA-MS UNDER-SLAB
- Install Slab Rebar
- Install Uponor AQUAPEX Radiant Floor Tubing
- Pour Concrete Slab
- Treat Concrete Slab With Nisus Corporation Bora-Care Termite Barrier Pretreatment
- Waterproof Home Theatre, Alcove, And Wine Cellar Walls With Carlisle Coatings
- Backfill Foundation

The initial site preparation work is being done by Sonoma County Builders, Inc. under the direction of Noble and Loyal Davis. This company, based both in Santa Rosa and Point Arena, California, has had extensive experience in excavation for both residential and commercial/civic projects for over the past 35 years. They are very supportive of the project and sensitive to the environmental concerns and protections that are in place for the project. Prior to the start of their excavation work, the tall grasses were cut down to dirt by Steve Glaze (Steve Glaze Backhoe). This top layer of roots is being stockpiled along with the extensive mud excavated and allowed to form a "top soil" compost for later spreading back over the site, just prior to landscaping with indigenous vegetation and trees. John Feeney, our supervising contractor and his team consisting of Jerry Feeney, John Michael Feeney, Brad Estele, and Aaron Phillips will perform the foundation work. Sebastopol California-based Weeks Drilling & Pump Company, under the direction of Chris Thompson, CEO, will drill the five 310-feet-deep geothermal bore holes after the foundation work is completed. Don Bartlett of Bartlett Mechanical Services will install the WaterFurnace® geothermal and Spunstrand® underground acoustically damped air-conditioning duct system. Bill Wilson Environmental Planning and Design, LLC with Dylan Coleman, principal in Mt. Shasta, California-based Wonderwater, are responsible for the on-site water-management systems, including the pond and drains. Aqua Harvest International's Terry McMains, based in Rio Rancho, New Mexico, designed the site application of the EcoRain™ Stormwater Tank Modules underground water cistern manufactured by Stormwater Solutions, LLC.

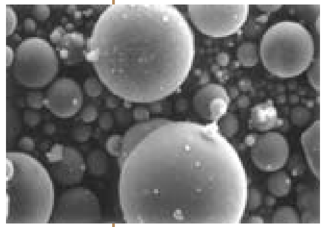
Spunstrand® Filament-Wound Fiberglass Underslab Duct

- Spunstrand HVAC duct is designed for direct burial applications and is manufactured using the filament-wound method to provide the greatest strength.

Stormwater Solutions EcoRain™ Tank Modules

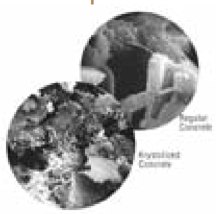
- Underground modular water cistern tanks manufactured with 100 percent recycled plastic. The modular tanks can be used to create any size void space underground by just butting them to one another. A 40-millimeter thick membrane encases the tanks to hold the recycled water harvested from the roofs.

Headwaters Resources



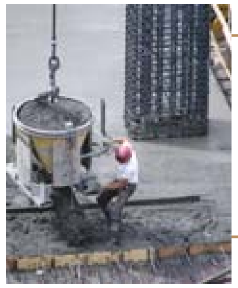
- Fly ash improves the performance of concrete foundations, making them stronger, more durable, and more resistant to chemical attack, while creating significant environmental benefits through stewardship of an abundant industrial resource. Because the tiny fly ash particles fill microscopic spaces in the concrete, and because less water is required, concrete using fly ash is denser and more durable. And concrete containing fly ash becomes even stronger over time compared to concrete made only with cement.

Kryton's KIM® Admixture System



- KIM admixture renders hardened concrete impermeable to water penetration, reduces drying shrinkage, protects steel reinforcements from corrosion, and improves concrete durability. The advanced integral crystalline chemicals react with water and un-hydrated cement particles to form millions of needle-like crystals to permanently block the pathways for water and waterborne contaminants.

Euclid Eucon A+



- Euclid Chemical Company's Eucon A+ Type A admixture serves as a fast-setting, water-reducing and plasticizing admixture for concrete that does not adversely affect concrete set times.

December 2007 And January 2008

iBeam® Systems Time-Lapse Pro Camera

• The iBeam® Systems Time-Lapse Pro all-weather on-site construction camera provides the means to build a high-resolution photo archive of the entire project, including stunning 1920 x 1080p (progressive) high-definition time-lapse movies each month.

iBeam® Systems Time-Lapse Pro Construction Camera

The iBeam® Time-Lapse Pro all-weather on-site construction camera, described in Part XIII, is expected to be installed and operational as one reads this Part XIV. Using iBeam's technology, one will be able to view on a daily basis a high-resolution photo archive of the entire project, including stunning 1920 x 1080p (progressive) high-definition time-lapse movies each month.

Photos will be captured and automatically uploaded to iBeam's secure server every 15 minutes from 6:00 am to 6:00 pm each day and will be viewable through a link from the *Ultimate Home Design* Web site. Furthermore, the images can easily be e-mailed or printed to document job site conditions.

At the conclusion, the entire construction photo archive will be featured as a 1080p high-definition time-lapse movie and will become part of a high-definition television program and educational documentary that Steve Michelson Productions and I are producing.

WildBlue™ Satellite Speed Internet®

In order to facilitate capturing the high-resolution images taken on-site by the iBeam Time-Lapse Pro construction camera, we are using the "always on" WildBlue™ Satellite Speed Internet® system developed by WildBlue Communications, Inc. and offered as part of EcoStar's DISH Network satellite services. The offer is provided separately under the EchoStar brand name, and sub-branded as "powered by WildBlue." The new WildBlue Enterprise Solutions™ satellite services system offers business-class broadband connectivity via state-of-the-art satellite technology using a 26-inch satellite mini-dish equipped with both a transmitter and receiver for two-way satellite connectivity to the Internet. See Part XIII for a full description of the service.

This Issue

In this issue, the focus is on the various construction elements related to site preparation.

The particular site has been extremely difficult to excavate, due to the crumply nature of the sandy clay soil and the depth of dependable bedrock upon which to support the foundation, concrete slab, and the home's structure. Excavation work began in late December and was interrupted by strong rainstorms throughout the month of January and through mid February. There were very few days that the weather permitted working on the site. In the month of January alone, the site received over 20 inches of rain, and still more through mid February, which caused mud conditions, which had to be alleviated. Thus, much of the initial excavation work was dealing with the topsoil mud accumulation. This work is completed and the topsoil is being stored for later reintroduction to the site to restore the original grades and as use for ground cover and landscaping to restore the indigenous vegetative site conditions in accordance with The Sea Ranch Vegetation Management Plan (see Part III and IV).

The site's soil conditions have resulted in extensive additional excavation work, including digging trenches around and within the perimeter of each building in the three-building compound. Deep trenches were necessary to reach the deeper laying bedrock. A specially engineered Controlled Density Fill (CDF) concrete mix was designed to fill the voids and provide a strong, stabilized surface upon which to support the foundation footings (see http://www.flyash.com/data/upimages/press/TB.12%20Fly%20Ash%20for%20Controlled%20Density%20Fill.pdf).

CDF (controlled density fill), is an engineered, controlled, concrete-fill material, which is self-placing, self-leveling, self-compacting, and non-settling. Our particular formula required a concrete mix consisting of equal amounts of Portland Cement and fly ash, water, and 3/8-inch aggregate and concrete sand. The so-called "two-sack mix" consisted of 200 pounds of fly ash and 188 pounds of Portland Cement per cubic yard in the final concrete mix. This would be considered a 4.13-sack cementitious-equivalent mix design. One sack of Portland Cement weighs 94 pounds. The mix design was formulated by Doug Yeggy at Headwaters Resources.

December 2007 And January 2008 (continued)

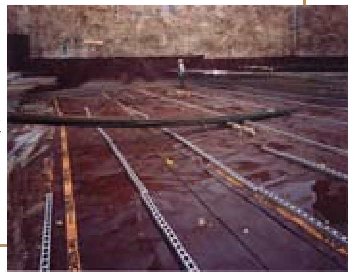
WildBlue™ Satellite Speed Internet®

• The "always on" WildBlue™ Satellite Speed Internet® system developed by WildBlue Communications, Inc. and offered as part of EcoStar's DISH® Network satellite services offers business-class broadband connectivity via state-of-the-art satellite technology.

December 2007
And January 2008 (continued)

Cosella-Dörkin DELTA-MS UNDERSLAB

- DELTA-MS UNDERSLAB is a tough, impermeable vapor-retarding membrane that is placed on the earth or granular prior to placing the concrete slab. The membrane provides a full-capillary break and vapor retarder that prevents the upward migration of moisture through the capillaries that exist in all concrete.



Headwaters Resources is the source of the fly ash that will be used in the concrete mixes designed for the project. The Portland Cement Association and the California Portland Cement Company are the sources of the cement used in the project. Delivery of the Portland Cement and fly ash to the concrete production facility was handled by Conti Materials. The local concrete production facility is Bed Rock Products, based in Point Arena, California. Bed Rock Concrete Pumping is providing the concrete pumping service for the project.

Doug has designed three other concrete mixes for the project: standard foundation footing, slab-on-grade, and the concrete poured into the Amvic ICFs. These mixes use Portland Cement, Kryton's KIM admixture, Euclid Chemical's Eucon admixture, and up to 40 percent fly ash. The mix design for the standard foundation footings will use 324 pounds of Portland Cement and 216 pounds of fly ash, or 40 percent, per cubic yard. The slab-on-grade mix design will use 362 pounds of Portland Cement and 155 pounds of fly ash, or 30 percent, per cubic yard. The Amvic ICF mix design will use 564 pounds of Portland Cement and 226 pounds of fly ash, or 40 percent, per cubic yard.

KIM admixture renders hardened concrete impermeable to water penetration, reduces drying shrinkage, protects steel rebar reinforcements from corrosion, and improves concrete durability. The advanced integral crystalline chemicals in the KIM admixture react with water and unhydrated Portland Cement particles to form millions of needle-like crystals to permanently block the pathways for water and waterborne contaminants.

Euclid Chemical Company's Eucon A+ Type A admixture serves as a fast-setting, water-reducing and plasticizing admixture for concrete that does not adversely affect concrete set times.

This first-stage concrete pour provided the necessary compaction strength to support the final-stage concrete-footing pour, upon which will be suspended the concrete slab. The slab will be five inches thick. Under the slab, covering a granular mixture compacted over the soil, will be a Cosella-Dorkin® DELTA®-MS UNDERSLAB waterproofing and vapor-retarder membrane designed for slabs on or below grade and a rigid Type II R-4 (per inch) 1-1/2-inch R-Control® Perform Guard EPS (expanded polystyrene) insulation from AFM Corporation.

DELTA-MS UNDERSLAB is a tough, impermeable vapor-retarding membrane that is placed on the earth or granular prior to placing the concrete. DELTA-MS UNDERSLAB prevents the early loss of hydration water, thus producing a concrete that meets design strength and provides more even curing characteristics in concrete. The membrane provides a full-capillary break and vapor retarder that prevents the upward migration of moisture through the capillaries that exist in all concrete. Additionally DELTA-MS UNDERSLAB can act as a barrier to soil gases. This will provide a healthy and dry environment.

A 2-3/4-inch thick R-Control Perform Guard EPS will be placed over the DELTA-MS UNDERSLAB to provide superior thermal mass for uniform heat transfer of the WaterFurnace geothermal/heat pump heated water through the Uponor® 1/2-inch AQUAPEX® in-floor tubing encased in the five-inch thick concrete slab.

Prior to pouring the slab concrete, suspended over the final stage concrete footings, the Zurn® Flo-Thru trench drain that runs the full length of the courtyard will be installed. The modular Zurn molded-slop drain is designed for load-bearing strength, hydraulics, chemical resistance, and structural integrity.

The radiant-floor portions of the five-inch thick concrete slab and underslab insulation will be encased at the perimeters with the EnergyEdge eight-inch Frame Building Rail (EE8fb). The PVC channel provides full-rigid insulation coverage from the top to bottom of an eight-inch slab edge to prevent radiant-floor heat loss through the edges of the concrete slab.

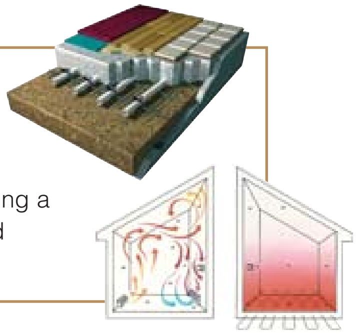
Prior to the granular mixture fill, the placement of the DELTA-MS UNDERSLAB membrane, the R-Control Perform Guard EPS, and the Uponor AQUAPEX-encased slab concrete pour, all the underground infrastructure for the home will be installed. This will include Uponor 1/2- and 3/4-inch red and blue pre-sleeved corrugated AQUAPEX tubing with outer insulation, the NuTone® VX1000 central vacuum system, and the complex electrical and low-voltage wiring system encased in conduit.

February 2008

R-Control® Perform Guard EPS

- Rigid Type II R-4 (per inch) 2-3/4-inch R-Control® Perform Guard EPS (expanded polystyrene) insulation from AFM Corporation provides superior thermal mass for uniform heat transfer of slab-encased radiant floor systems. Photos courtesy of AFM Corp.

Uponor® Radiant Floors



• Warm water circulates under the floors throughout the Optimum Performance Home using Uponor's durable, flexible, and resilient crosslinked polyethylene AQUAPEX tubing, providing a comfortable, even heat without stirring up dust and pollutants.

NuTone® Central Vacuum System

• A NuTone® Central Vacuum System will be featured in the home to help maintain healthy interior air quality. NuTone's central vacuum power units feature a space-saving sleek oval-shape design, internal sound suppression system, and a status light on the hose handle and power unit, which indicates when the VX™ unit's bag or canister is full and needs emptying.

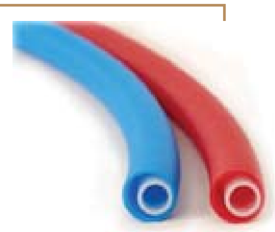
Zurn® Flo-Thru Trench Drain

• The modular Zurn® molded-slop Flo-Thru trench drain is designed for load-bearing strength, hydraulics, chemical resistance, and structural integrity.

EnergyEdge

• The EnergyEdge Frame Building Rail (EE8fb) is designed to provide insulation at the radiant-floor perimeters of the concrete slab. The PVC channel provides full-rigid insulation coverage from top to bottom of the slab edge to prevent radiant-floor heat loss through the edges of the concrete slab.

Uponor® Pre-Sleeved Corrugated AQUAPEX®



• Uponor® 1/2- and 3/4-inch red and blue high-density polyethylene (HDPE) pre-sleeved corrugated AQUAPEX® tubing is designed for durability and provides protection for installation in the soil and allows for easy removal over time.

Bora-Care®

• Nisus Corporation's Bora-Care® is a primary termite barrier pre-treatment that creates a continuous barrier that termites cannot cross, eliminating their food source.

Uponor's red and blue high-density polyethylene (HDPE) corrugated pre-sleeved 1/2- and 3/4-inch AQUAPEX tubing provides protection for installation in the soil and allows for easy removal and replacement of the tubing if required over time. In addition, the red and blue color-coded sleeves easily identify hot and cold water lines.

The NuTone 1,040 watt-cyclonic central vacuum power unit features HEPA-rated filtration, Microban protection, and Teflon anti-stick technology.

A three-inch filtered underground water line will be installed to serve as a surplus supply of water available from the pond. A standard 2-1/2-inch value red-painted standpipe hydrant with a male National Hose fire-thread fitting will be located at the driveway entrance at the front of the boat garage, to which a fire hose can be connected.

Following the curing of the concrete slab, Nisus Corporation's Bora-Care® will be applied directly to the finished surface slab as a primary termite barrier pre-treatment. Bora-Care creates a continuous barrier that termites cannot cross and eliminates their food source.

The next installment in this series of case-study articles will cover the actual work being done to accomplish the tasks described, as well as the start of the above-slab Amvic ICF wall construction. In the meantime, photos will continue to be posted on the *Ultimate Home Design* Web site (www.ultimatehomedesign.com/oph/php) depicting progress in the construction of the first Optimum Performance Home.

Design Concept

As previously noted in this series, the home design integrates all of the concepts advocated in *Ultimate Home Design*. The goal is to demonstrate how modern building products and methods can make life safer, more comfortable, and more enjoyable. The science of optimum performance homes concerns itself with building structures that use less energy, are quieter and more comfortable, have fewer problems with material degradation, provide clean air and water, and do less damage to the environment. As an integrated and holistic design, the house will serve as a permanent residence that allows its occupants to age in place.

The high-performance building systems to be employed are designed to exceed California building code requirements and resist natural disasters more effectively than a code-minimum house, even with the new California code requirements that require use of non-combustible or fire ignition-resistant building materials. Built with stronger building materials and superior techniques, the home will be safer, allowing homeowners greater peace of mind. The Optimum Performance Home qualifies for the Fortified…For Safer Living® program of the Institute for Business & Home Safety (www.ibhs.org/business_protection). This program specifies construction, design, and landscaping guidelines to increase a new home's resistance to natural disaster.

In addition, the home will meet the guidelines and qualifications for the U.S. Department of Environmental Protection's ENERGY STAR®, the EPA's (Environmental Protection Agency) WaterSense™, and the American Lung Association® Health House® programs. It also will meet the requirements of the National Association of Home Builders' (NAHB) Model Green Home Building Guidelines, the Sustainable Buildings Industry Council (SBIC) Green Building Guidelines, and the "Green Points" program. Sonoma County and The Sea Ranch Association are now considering this program for adoption.

Furthermore, the home's design was the subject of a case study analysis presentation before the Custom Residential Architects Network (CRAN), Full Spectrum Practice Convention of the American Institute of Architects on October 20, 2007 in Chicago, Illinois.

The home is also a case study of the California Energy Commission in terms of energy-efficiency applications and an advanced water-saving plumbing plan.

Finally, the home is a national showcase for CEDIA (Custom Electronic Design and Installation Association), and is the subject of a series of articles on the design and installation of the electronic lifestyle components in the home. These articles are featured in CEDIA's *Electronic Lifestyles*® quarterly magazine.

February 2008 (continued)

March 2008

The Setting

The Sea Ranch is an internationally renowned 5,000-acre environmentally protective residential development situated within a pastoral and forested coastal enclave and nature preserve approximately 110 miles north of San Francisco, California. This stunning development, now celebrating its 43rd anniversary, straddles a ten-mile stretch of Highway 1 along a stretch of uniquely beautiful rugged coastline, ending at the northern tip of Sonoma County and the south bank of the Gualala River.

The Sea Ranch is widely regarded as a unique and remarkable residential development. During the 1960s and 1970s, The Sea Ranch was at the forefront of environmentally responsible development. It was conceived and designed by architects and landscape architects who wanted to provide a harmonious mixture of custom homes and pristine natural Northern California landscape in oceanfront, meadow, and forest environments. In fact, The Sea Ranch concept and its architecture are recognized in schools of architecture around the world, and it is frequently used for case studies in environmental and architectural design. The first condominium complex to be built on the southern coastal bluffs of The Sea Ranch is now a registered national architectural site.

Single-family development occupies approximately 2,500 acres without borderline fences or other visible delineation of property lines. The remaining acres are permanent green-scape commons with 45 miles of nature trails for walkers, bicyclists, and equestrians. Each home is custom designed by an architect/architectural designer following site-specific design guidelines and is situated off a private road network without curbs, sidewalks, or streetlights. The Sea Ranch is a very unique residential development woven into a tapestry of buildings and nature and committed to environmental preservation. The development includes 2,288 lots for single-family custom homes, with 531 remaining to be developed (1,757 already developed and 26 under construction).

The Sea Ranch is managed by The Sea Ranch Association, a Common Interest Development (CID) with an elected volunteer Board of Directors, and supported by numerous volunteer committees. All development on The Sea Ranch is subject to design review and the approval of a Board-appointed autonomous Design Committee. The Design Committee is presently comprised of architects and landscape architects, though it does not include anyone with experience in vegetation management or "green" sustainable building design. A legal set of Covenants, Conditions, and Restrictions (CC&Rs) govern the development and are designed to protect The Sea Ranch concept.

The Home

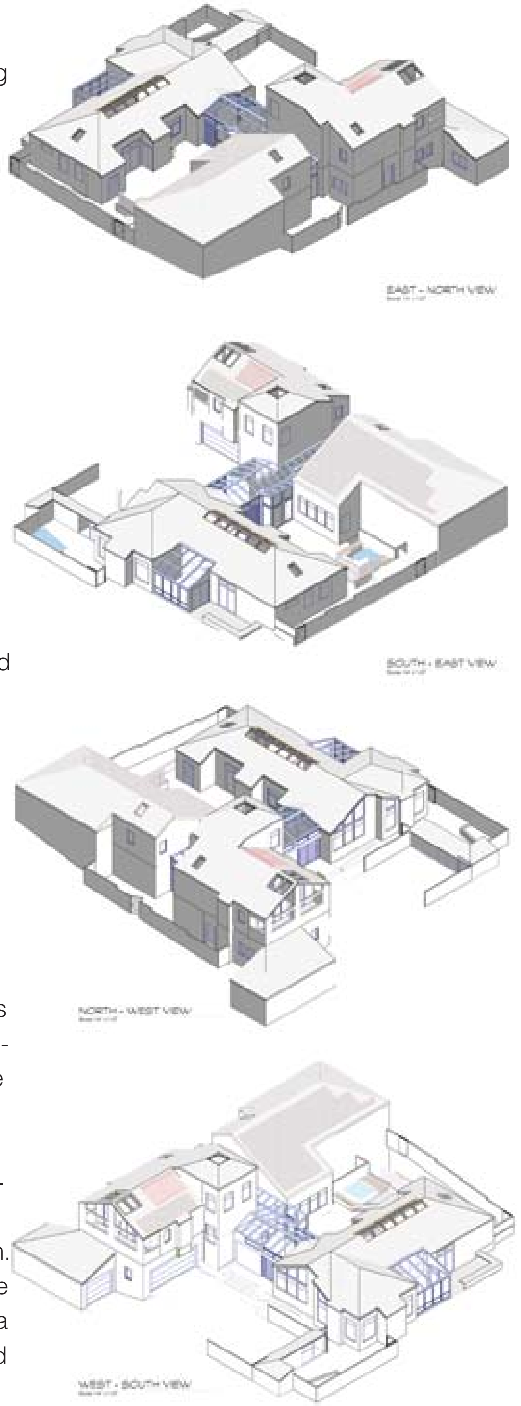
The Sea Ranch Design Committee imposes upon designers architectural building blocks derived from the original rural structures found on the northern California coast. Designers are expected to apply their creativity to render various arrangements and deviations to arrive at a custom solution that specifically responds to the site. Successful proposals submitted to the Design Committee address the issues of passive solar positioning, wind, glazing (window) layout, privacy between neighbors, vegetation protection, view preservation, topography and grade changes, roof slopes, appropriate exterior materials and finishes, and other exterior design considerations—all within the building and site design.

A focus of the Optimum Performance Home's design is to stand as a showcase for the "green" movement and demonstrate means of reducing a home's impact on the planet through the use of Low-Impact Development (LID) and environmentally responsible and sustainable building materials. It is hoped that the home will become a case study for a "Green Points Program" suited to the scale of The Sea Ranch.

DESIGN
optimum performance home

March 2008 (continued)

The home's 3,272-square-feet living space (4,441-square-feet total building "footprint," including garages, covered walkways, courtyard, and decks) will be arranged in a three-building compound using a well-sealed, well-insulated, super-tight building envelope that reduces temperature fluctuations and enhances overall energy efficiency. This arrangement provides for an alcove courtyard protected from the prevailing wind from the northwest. The home is designed with differing spatial experiences throughout to encourage exploration. The home will display innovative interior design and be furnished in a contemporary Frank Lloyd Wright style appropriate to its dimensions. The home design connects the indoors and the outdoors with covered walkways, a courtyard, decks, and a garden to



Four Perspective Views Of The Optimum Performance Home At The Sea Ranch

expand livable space, without requiring heating or air conditioning. The home is designed in accordance with biophilic design principles with abundant and excellent use of natural light and natural indigenous landscaping planned. (For an in-depth analysis of the biophilic attributes of the home, please read "Biophilic Design," "Biophilic Design Attributes," and "The Interior Design Process, Part I: Synthesizing Sustainability, Universal Design, And Technology" authored by Julie Stewart-Pollack in Issue 3 (May/June 2006), Issue 4 (July/August 2006), and Issue 10 (July/August 2007), respectively.

The main-floor living area is designed to accommodate the capabilities of all occupants without any challenging physical barriers, even for the elderly and disabled. The home design features a ground-level open plan for the living room, dining room, master bedroom suite, and spacious kitchen with solarium, exhibition cooktops, and home management system.

The second building in the compound is designed to accommodate a large state-of-the-art Optimum Performance Home Theatre™ with integrated rear-screen projection room and a home office.

The third building will include a two-car and boat garage, workshop, main-level guest bathroom, and laundry room. The second level of this building will have two guest bedrooms, a bathroom, and a dedicated library/home theatre/surround music room distinguished by a high-tower feature. To insure universal access to this floor, the design provides for an Otis® Gen2 residential elevator.

The entrance and walkways that connect the three buildings and the solarium will be enclosed with insulated- and solar gain-reduced-tempered glass. There will be a seating area at the vestibule entrance to the home. The main entrance vestibule will serve as an oversized mudroom. The driveway, area around the garage, guest parking, and entrance to the home—as well as all paths—are designed in accordance with The Sea Ranch guidelines governing exterior hard-surfaced paths. All such surfaces are pervious to virtually eliminate water runoff. The surface will be packed with decorative gravel to enhance the natural appearance of the home's setting. There also will be a dedicated equipment room off the courtyard, which accommodates the Uponor and WaterFurnace radiant-heating apparatus, TrendSetter® solar hot water storage tanks, Navien's 98 percent condensing on-demand propane-fired tankless water heater, and other equipment. The backup Kohler® generator is housed within a separate weather-resistant tower located off the north wall of the two-car garage and guest bedroom, within the fenced dog run. This tower is designed to optimize the northwest wind performance of the PacWind® Seahawk® vertical-axis Savarrieus™ wind turbine disguised within (see Part XII, November/December, Issue 12).

The home site is nestled on an almost-acre parcel at the edge of a forested area of the southern section overlooking the Pacific Ocean, offering distant water views. Some of the home's features will include a Benissimo® slate-floor outdoor courtyard, two thick solid hardwood Ipé deck areas, in-ground Dimension One Spa® Amoré Bay hot tub, Finnelo® Finnish sauna, and underground wine cellar. The orientation of the home on the site is designed to take advantage of natural lighting and passive solar heating and cooling. Good site and land planning will result in minimal land disturbance and preservation of natural features and environments.

Landscaping will consist of The Sea Ranch-approved indigenous vegetation with low-water requirements and unique water conservation features, including two ponds and a stream supported by rainwater catchment and captured runoff. Site grading has been specifically planned to enhance the project's placement in the watershed, and the design incorporates the principles of Low Impact Development to minimize runoff from impervious surfaces and mimic the natural hydrology

DESIGN
optimum performance home

in overall effect. The resultant water harvesting will then minimize the use of irrigation, and the increased infiltration and retention will passively support the native landscape. Additionally, a gray water system will be used for undersurface plant irrigation.

Next

Now that we have commenced site preparation, this continuing series of articles will focus on the design elements as they pertain to each stage of construction, and will include coverage of the technologies and building systems and the materials used and applied to construct the first Optimum Performance Home. UHD

The Author

Gary Reber is the President of Ultimate Home Design, Inc. and the founding Editor-In-Chief and Publisher of *Ultimate Home Design*®, The Optimum Performance Design & Build Resource For Environmentally Enhanced Lifestyle Living™. He is also President of WSR Publishing, Inc, which publishes *Widescreen Review*®, The Essential Home Theatre Resource™. His diverse background in several fields includes an undergraduate, graduate, and postgraduate university education in architecture, community planning, and economic development planning. For years he was a consultant on community and economic development planning. For the past 15 years he has been an editor and publisher of magazines in the consumer electronics and architectural fields. Gary can be reached at 951 676 4914 or gary@ultimatehomedesign.com.

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- Amvic, Inc., 501 McNicoll Avenue, Toronto Ontario Canada M2H 2E2, 416 410 5674, www.amvicsystem.com
- Aqua Harvest International, 3628 Greystone Ridge Court, Rio Rancho, New Mexico 87124, 505 975 5008, www.aquaharvestonline.com
- Bartlett Mechanical Services, 6755 Oak Street, Anderson, California 96007, 408 313 2486, www.bartlettmechanical.com
- Bed Rock Concrete Pumping, P.O. Box 503, Point Arena, California 95468, 707 882 2637
- Bed Rock Products, Inc., 135 Hay Parkway, Point Arena, California 707 882 2323
- Bill Wilson Environmental Planning & Design, LLC, 71 Del Casa Drive, Mill Valley, California 94941, 415 383 2919, 805 689 7639
- Broan-NuTone, 926 West State Street, Hartford, Wisconsin 53027, 800 548 0790, www.nutone.com
- California Portland Cement Company, 2025 East Financial Way, Glendora, California 91741, 800 272 9119, www.calportland.com
- Conti Materials, P.O. Box 30248, Stockton, California 95213, 209 467 0626, www.contimaterials.com
- Cosella-Dörken Products, Inc., 4655 Delta Way, Beamsville, Ontario, Canada L0R 1B4, 905 563 3255, www.cosella-dorken.com
- EchoStar DISH Network, 9601 South Meridian Boulevard, Englewood, Colorado 80112, 888 825 2557, www.dishnetwork.com
- Energy Edge, 7701 East Kellogg, Suite 722, Wichita, Kansas 67207, 316 618 1983 www.energyedgeform.com
- Euclid Chemical Company, 19218 Redwood Road, Cleveland, Ohio 44110, 800 321 7628, www.euclidchemical.com
- Feeney Construction, 14660 McCourtney Road, Grass Valley, California 95945, 530 477 7647, 707 884 9458
- Hacker Industries, Inc., 610 Newport Center Drive, Suite 250, Newport Beach, California 92660, 800 642 3455, www.hackerindustries.com
- Headwaters Resources, 10653 South River Front Parkway, Suite 300, South Jordan, Utah 84095, 888 236 6236, www.flyash.com
- iBeam Systems, Inc., 280 North 8th Street, Suite 30, Boise, Idaho 83702, 800 403 0688, www.ibeamsystems.com
- Kryton Canada Corporation, 8280 Ross Street, Vancouver, B.C., Canada V5X 4C6, 604 324 8280, www.kryton.com
- Portland Cement Association, 5420 Old Orchard Road, Skokie, Illinois 60077, 847 966 6200, www.cement.org
- Seepage Control, 7301 West Boston Street, Chamdler, Arizona 85226, 800 214 9640, www.seepagecontrol.com
- Smart Drain, P.O. Drawer 2219, Columbia, Maryland 21045, 800 638 8582, www.smartdrain.com
- Sonoma County Builders, Inc. 6280 Old Redwood Highway, Santa Rosa, California 95403, 707 837 2997 / P.O. Box 244, Point Arena, California 95468, 707 684 9144
- Spunstrand Incorporated, 620 North Post Street, Post Falls, Idaho 83854, 208 665 7444, www.spunstrand.com
- Steve Glaze Backhoe, 2766 Parkview Drive, Lakeport, California 95453, 707 263 3055
- Steve Michelson Productions, Lobitos Creek Ranch, 2800 Lobitos Creek Road, Half Moon Bay, California 94019-2547, 650 726 2460, www.lobitoscreekranch.com
- StormTech, 20 Beaver Road, Suite 104, Wethersfield, Connecticut 06109, 888 892 2694, www.stormtech.com
- Stormwater Solutions, LLC, 3940 Laurel Canyon Boulevard, Suite 856, Studio City, California 91604, 866 786 7690, www.stormh2osolutions.com
- ThermaSAVE/IHSN, Inc, 4002 Helton Drive, Florence, Alabama 35630, 256 766 3378, www.thermapanel.net
- Uponor North America, 5925 148th Street West, Apple Valley, Minnesota 85254, 800 321 4739, uponor-usa.com
- WaterFurnace International, Inc., 9000 Conservation Way, Fort Wayne, Indiana 46809, 800 222 5667, www.waterfurnace.com, www.stormh2osolutions.com
- Weeks Drilling & Pump Company, 6100 Highway 12, Sebastopol, California 95472, 707 823 3184, www.weeksdrilling.com
- WildBlue Communications, Inc., Greenwood Corporate Plaza, Building. 1, 5970 Greenwood Plaza Boulevard., Suite 300, Greenwood Village, Colorado 80111, 866 945 3258, www.wildblue.com
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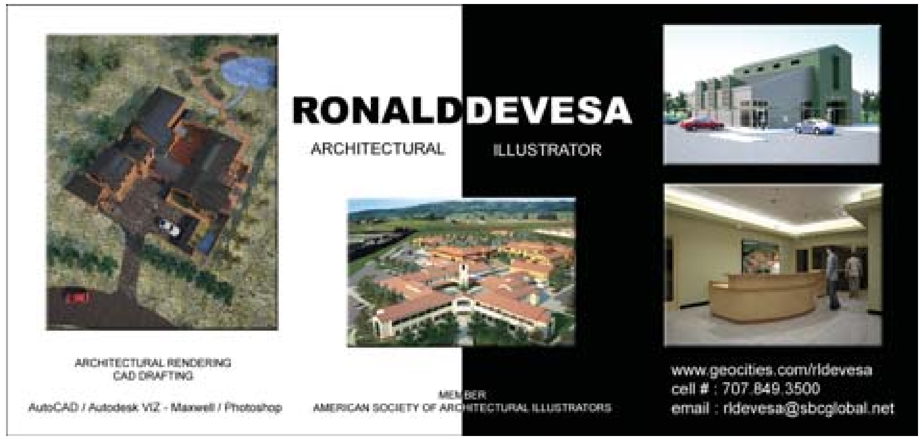

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High Volume Fly Ash—A Tool For The Concrete Designer's Belt

Doug Yeggy, Headwaters Resources

When taking into account designing with higher volumes of fly ash, we need to look at fly ash as a tool in the designer's tool belt. The added workability that higher-than-typical volumes of fly ash (20 to 35 percent) impart in a concrete mix design allows the designer to increase the total coarse aggregate content of a typical concrete mix design while at the same time decreasing the fine aggregate content. This in turn reduces the water requirement due to a decrease in aggregate surface area. The higher-than-typical fly ash content acts as a water reducer, in a sense, by allowing the designer to increase or optimize the coarse aggregate content over what is typically used with any given combination of coarse and fine aggregates.

Oftentimes 3/8-inch x #8 aggregate, or pea gravel, is introduced depending on the continuity of the top size aggregate. This 3/8-inch material will fill in the spaces between the larger sized aggregate, allowing the fine aggregate and cementitious materials to extend or become more workable.

A very important aspect of designing with higher-than-typical volumes of fly ash is the addition of a Type A water reducer, such as Euclid's Eucon A+ or a mid-range water reducer at a Type A dosage rate, such as Masterbuilder's Polyheed 997. These admixtures allow the cement particles to deflocculate (push away from each other), allowing the water to combine more evenly around each individual cement particle, making the cement more efficient through the various chemical reaction phases. At low-dosage rates, these types of admixtures do not retard the concrete set times as dramatically as one might think. Be aware that more is not always better when it comes to admixtures and high-volume fly ash concrete. The best admixtures, used incorrectly, can retard the set of conventional concrete for hours or even longer. Check the manufacturer's suggested dosage rates on the admixtures that you are going to use and see if the particular admixture has a set regulating characteristic built into it. Then use the admixture at the lowest suggested dosage rate. Remember, you should have already gotten quite a bit of water reduction from the increased amount of fly ash and optimization of the coarse aggregate.

When placing and finishing higher volume fly ash concrete, there are many variables that need to be addressed. First of all, fly ash will impart greater workability to a concrete mix. What the eye would lend you to believe is a four-inch slump WILL PROBABLY SLUMP OUT TO 5 ½-INCHES OR GREATER. Make sure that when adding water at the jobsite, you add water in small increments until the desired slump is attained. Ten gallons of water in a nine-cubic yard batch can dramatically affect the slump of this type of concrete, and what you saw as a three-inch slump can very quickly become a six-inch slump.

Another variable that is oftentimes misunderstood is concrete set times. The set times of concrete are directly related to the temperature of the concrete, as well as the ambient temperature, and to some extend humidity. At 70 degrees, a concrete mix should attain initial set within five hours or so. This is a rule of thumb that I have used successfully for quite some time. For every 10-degree decrease in concrete temperature, and to some extent, ambient temperature, most five-sack concrete mix designs will take twice as long to attain initial set based on the 70-degree temperature guideline. If the concrete temperature dips below 40 degrees, then the concrete can sit indefinitely as long as direct sun does not hit the concrete or ambient temperatures do not increase for an extended period of time above 40 degrees.

Next, the importance of correct finishing techniques for higher volume fly ash concrete, as well as straight cement concrete, cannot be emphasized enough. Most finishers tend to use magnesium float on concrete after striking off of the surface. In just about all cases, a wood bull bloat and hand floats should be used in the initial finishing sequence. Here is the reasoning: "When placing concrete, you can count on one thing always happening, the lightest part of the concrete mix will want to come to the top." This means the water or water vapor typically migrates up through the concrete as the heavier aggregates and cementitious materials settle into place. Using a magnesium float at the beginning of your finishing sequences and intentionally or unintentionally turning it on edge can trap water below the surface of the concrete and results in a higher-than-wanted water/cement ratio in the top wearing surface of the concrete. This can also happen during the finish trowel sequence and is evidenced in either case by a blotching of the concrete surface.

Use a wood float to lay the concrete down and wait until the surface starts to dull as the water sheen comes off of it. This is especially important when using higher volumes of fly ash in your concrete, as the concrete will not bleed as readily as a finisher is used to it doing. Once the water sheen starts coming off the surface of the concrete, use the magnesium float to clean up the humps, dishes, or fins that were left behind during the more plastic wood float sequence. Proceed from here with your typical finishing sequences until the desired finish is attained. "If the concrete is air entrained, special precautions must be taken to not seal the surface with the magnesium float, as wood floats should not be used on air-entrained concrete."

Lastly, and most importantly, Cure Your Concrete. All exposed concrete needs to be kept wet for a minimum of three, and more preferably seven days, by running intermittent sprinklers on the concrete or by covering the exposed surfaces with wet burlap, plastic, or hay. If a curing compound is used, make sure to use a high-quality, high-solids curing compound, and be sure to hit all exposed surfaces with the curing compound from two separate coverage points with at least a 45-degree separation from each of these points. I can not emphasize the importance of curing enough. Once your concrete is correctly placed and finished, curing will be the most important deciding factor to ensure your concrete will look, wear, and outperform your expectations. UHD

Making The American Dream Universal

Ken Little

View of Front Porch

synopsis

- "Baby boomers" could find their homes impossible to live in because of unanticipated medical conditions or disabilities—a reality that proponents of the universal design concept would like everyone to consider.
- Universal design should be embraced by builders and contractors, in addition, to "baby boomers" who can dictate the demand for universal design.
- A universal designed home should absolutely have no place inside or outside the property that cannot be used independently by someone who has enough ability to achieve that; and if they're unable to live independently, it should be set up for a care giver or someone else to live there.

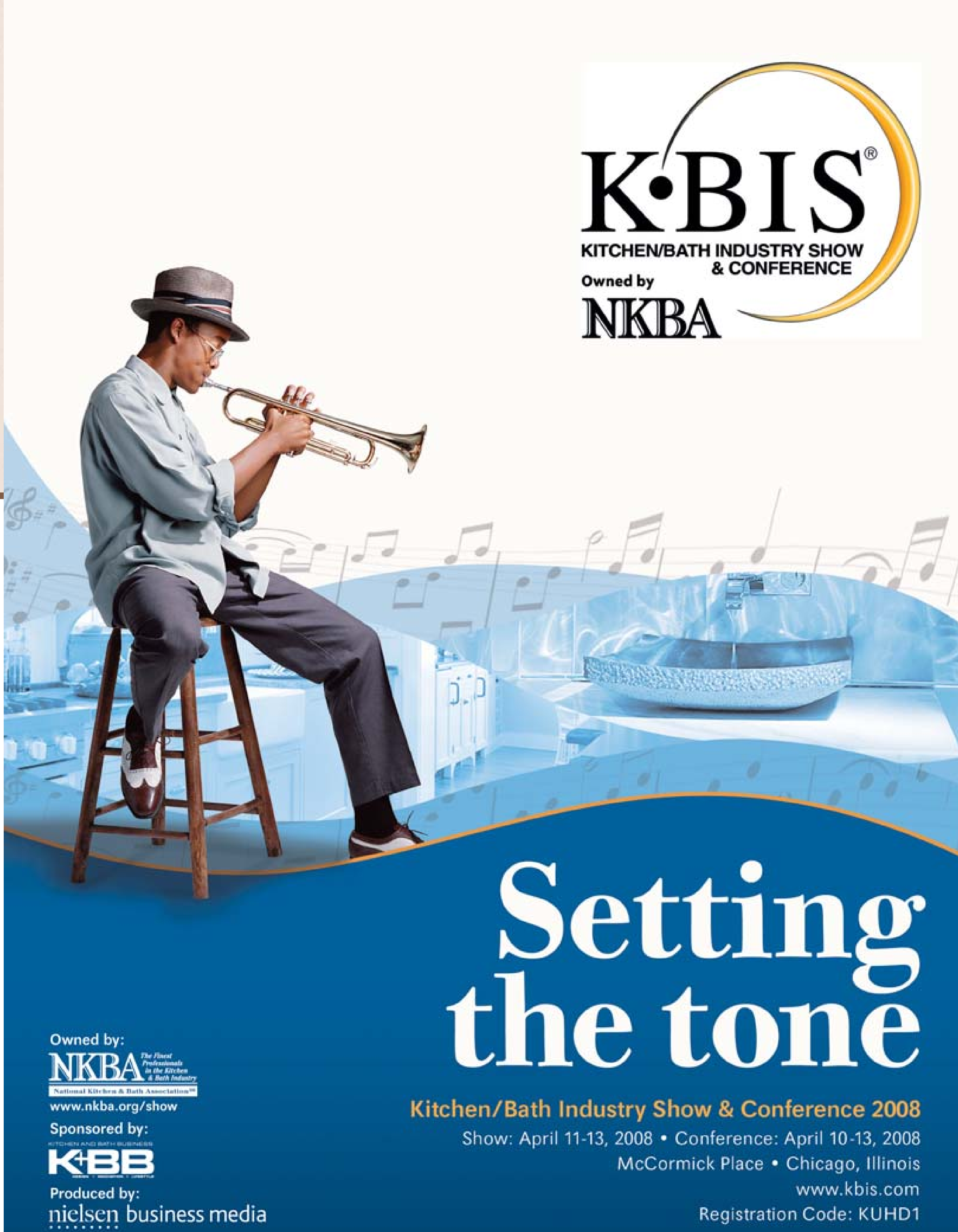
Americans age 55 and over will buy one of every five new homes sold this year, research by the National Association of Home Builders shows. But in the blink of an eye, those "baby boomers" could find their homes impossible to live in because of unanticipated medical conditions or disabilities.

It's a reality that proponents of the universal design concept, like Eric Anderson, would like everyone—not just those with pre-existing disabilities—to consider.

As America's population ages, Anderson hopes the "baby boomer" generation takes heed. The Baltimore-based specialist in accessible housing services anticipates a growing need and is taking universal design to a new level.

Independent Living

Client Michael Morgan understands the message Anderson is trying to convey better than most people. The 34-year-old Baltimore man was injured in an automobile accident seven years ago that left him a paraplegic, with only limited use of his hands and arms. Like so many other Americans with life-changing disabilities, Morgan has searched diligently to find a home environment that meets his unique needs and his desire to live as independently as possible.



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"Feeling 'at home' is not something that you enjoy too often after an accident like this," Morgan says.

Anderson is committed to providing affordable housing tailored to the needs of disabled clients like Morgan, who lived in one of Anderson's remodeled properties for several weeks while his own home was being renovated. "But universal design is not just for those with disabilities," Anderson says. He wants to see universal design embraced by builders and contractors, in addition to the "baby boomers" who can dictate the demand for universal design homes.

"My target audience is anyone who wants to obtain accessible housing through modifications or purchasing a new house with universal design concepts. I want to give people the ability to create an environment, which allows them to live as independently and safely as possible today, but also in the future. Since accessibility codes don't apply to single-family housing, universal design works well for people with disabilities, people like Michael," Anderson says.

"When people like Michael become injured, because of the severity of their injuries, they need answers now. They can't wait six months."

Anderson purchased a 1,000-square-foot home in suburban Pikesville in 2005 and completely remodeled the property to include over 70 features of universal design. To the casual observer, the beige, ranch-style house looks no different from others in the tree-lined suburban neighborhood. But the interior and outdoor areas subtly incorporate accessible and universal design features.

The unique combination of universal design concepts and innovative ideas has drawn attention from local agencies that work with the disabled, including the Baltimore County Department of Aging. Anderson was recognized with the 2006 Accessibility Award from Baltimore County's Commission on Disability.

He says the accolades are all well and good, but positive feedback from a disabled person like Morgan demonstrates where the practicality of the design innovations really hit home. Morgan, who faces daily challenges most people can't conceive, gives Anderson's model home glowing reviews.

"You spend so much time in a hospital and institutions that you just want to go home and get back to normal as soon as possible. Something like this house, it gives someone a positive boost in spirit," Morgan says. "A place like this allows that to happen. What's great about this house, from the front to the back, is there is absolutely no place inside or outside this property that cannot be used independently by someone who has enough ability to achieve that. And if they're unable to live independently, it's set up for a care giver or someone else to live here."

Spreading The Message

Anderson, 39, founded a company 10 years ago to provide services related to the home health care field. Through interaction with disabled clients, he saw how traditional architectural barriers restricted his clients' ability to live in their homes, and he began developing solutions. Anderson has since obtained his real estate license, a contractor's license, and an appraiser's license to effectively tie together accessible housing concepts with aspects of universal design.

One of Anderson's primary goals is to promote independence for physically impaired users.

"There are few, if any, realtors or appraisers who specialize in universal design housing," he says. "I focus on affordable, accessible single-family housing. I don't typically work with multifamily buildings. I want to provide the American dream. The American dream is having your own home, so I created a model house to show people how universal design can attractively create a livable environment for anyone. If you're disabled, you have very few places to live. You have to think of community amenities, like local restaurants, shops, and expected services, so all these things factor in to where somebody wants to live. Once you determine where you want to live and you look in that particular town or neighborhood, you'll find a house, but it's not going to be accessible. You're very limited."

A Walking Tour

Anderson, accompanied by Morgan in his wheelchair, walks the property and goes from room to room in the redesigned home, pointing out some of the universal design features.

Fill was applied outside to build up lower levels on the property and reduce the elevation difference. Sidewalks are level with little or no slope and are at least 36 inches in width. The maintenance-free exterior includes a cement ramp and composite walkway. There's a level driveway area with at least 13 feet of clear space.

> "...give people the ability to create an environment, which allows them to live as independently and safely as possible today, but also in the future."

Entrance

"Universal design suggests using dirt to elevate the ground, which decreases the difference between the main level of the house and the ground. Doing this reduces the need for a wheelchair ramp," Anderson says. "The house previously had 24 inches of elevation between the front door and driveway, which would have required at least a 24-foot ramp. By elevating the ground, I was able to use inclusive design to incorporate a small ramp behind the front porch railing. The house appears to have a normal front porch."

The main entrance includes house numbers in large, color-contrasted lettering clearly visible from the street. The house has an awning to protect the entrance from rain and snow and a five-by-five-foot landing outside the front door, which is 36 inches wide, for better wheelchair accessibility.

The main floor is at ground level, and the porch floor is at the same level as the ground floor inside. There are no raised threshold exits to impede access to the house. There are lever-style door handles that can be pushed down with an elbow—an important feature for those with a disability or someone coming in the house with dirty hands.

Anderson installed a remote lock system in the doors that eliminates the need for keys. There's a front door intercom that allows someone inside to speak with a visitor before they are let in.

"If you look at the front door, you'll notice the long window along the side of the door. This sidelight allows a child or someone who uses a wheelchair the ability to see who's at the door without using the peephole. The sidelight also allows natural light into the house. It's things like door sidelights that subtly incorporate universal design into the house, which makes it usable for all populations," he says.

On the porch next to the front door, Anderson built a shelf, allowing items like groceries to be set down while he is letting himself in. An electric door strike permits access to the house from any telephone inside, and a video camera mounted at the door allows a person in the master bedroom to see who is visiting without having to go to the door. Everything can be controlled from the bed.

"It's terrific. The door system gives you security. I can see the person outside through the camera on the master bedroom TV, as well as being able to unlock the door through the phone. The keyless door also works well for someone who doesn't have the ability to hold a key. You simply enter the combination and the door opens," explains Morgan.

There is no change in the flooring levels between rooms. Any threshold over one-half inch is considered a barrier. "The design feature eliminates a lot of wear and tear on the shoulders and wrists of a wheelchair-bound person attempting to get from room to room in a manually controlled wheelchair," Morgan says.

Morgan enjoys cooking for himself and his wife, so the universal design kitchen created by Anderson is one of his favorite rooms in the house.

Wide-Open Space

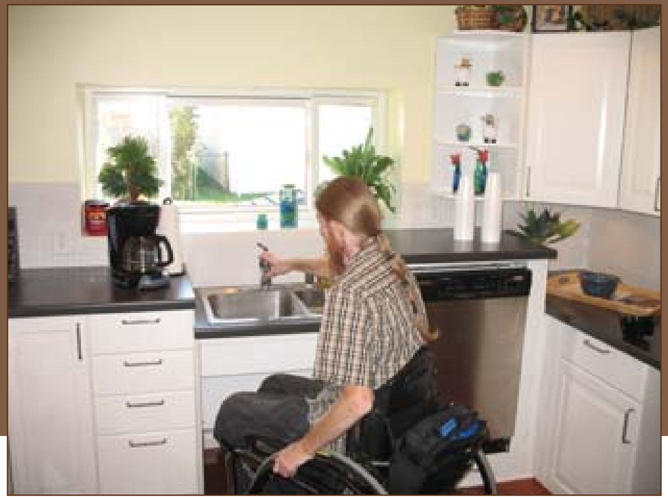
The bright, wide-open room offers lots of floor space for maneuvering. There are counters and other work surfaces at two or more different heights and enough clear counter space to set down dishes next to all appliances.

The kitchen also features rounded corners on all counters and clearance under counters for meal preparation. There are anti-scald, single-lever handle faucets and a raised platform under the dishwasher to eliminate bending and kneeling.

Lower cabinets have pullout drawers, and the upper cabinets have pull-down units. The stove is operated by front controls. There are looped handles on kitchen appliances and a side-by-side refrigerator and freezer.

"I can tell you that while working in the kitchen, if you count how many times I have to pull items down with cabinet drawers in the course of making one meal, you realize how important this is," Morgan says, gesturing to the pull-out lower cabinets.

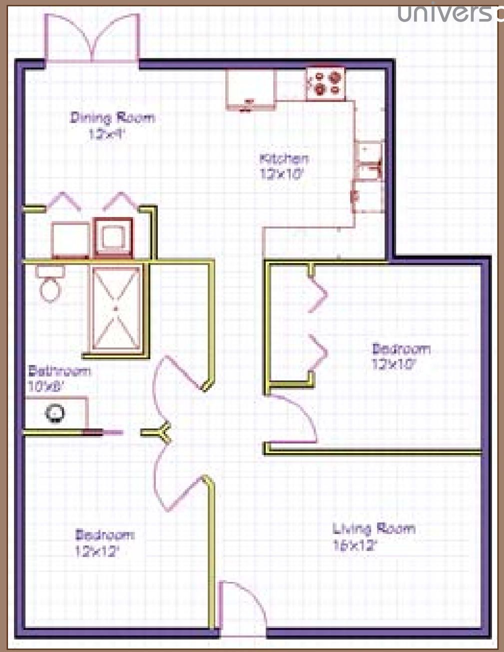
"It's virtually effortless. Even if I didn't have two hands, I could still operate it," he says. "Living with a disability in a normal house, you're typically isolated to a few rooms—due to the barriers—or you're unable to use all the aspects of the house. These barriers shrink your world, and I can't tell you



Kitchen Area Sink

Open Kitchen Area

Barrier-Free Outdoor Access



Floor Plan

Barrier-Free Wide-Door Access To Patio

Barrier-Free Bathroom

what kind of effect it has on you and the people you live with. To overcome those barriers and be able to prepare a meal in the kitchen makes me feel more productive and, at the same time, takes weight off my wife's shoulders.
This house is terrific. It does it all."

The barrier-free bathroom also incorporates ample floor space for movement between bathroom fixtures, a walk-in shower with a minimal threshold and a minimum 36- by 60-inch shower area. It has an adjustable-height, handheld showerhead with convenient controls, reinforced grab bars, and a built-in shower seat.

There are anti-scald, single-lever handle faucets, rounded corners on bathroom counters, and a toilet seat between 17 and 19 inches in height. There's a telephone in the bathroom and clearance under the sink to allow someone to sit or use a wheelchair to wash his face or brush his teeth.

The sink has a drain located toward the back, allowing for more clear space. The no-step shower is designed for multiple uses, and provides an area to transfer on and off the toilet and serve as a wash area.

"This shower is actually set up better than the one I designed for me at my house. With a fold-up chair, you're completely surrounded by support. You can easily change gears in this room. You can come in here and just hose this place down," Morgan says.

The house has a laundry area on the main floor with front-loading appliances on raised platforms and with front-operated controls. Elevated appliances provide better access to all users since they're elevated off the ground. There is adjustable closet shelving and pull-down closet rods.

Doorways in the house and maintenance-free hallways are 42 inches wide. There are large, rocker-style electrical switches, and all electrical outlets are 24 inches above the floor, while the programmable thermostat and other controls are placed about 48 inches above the floor. The circuit breaker panel is easily accessible, and the house features lighted switches that are visible in the dark.

French doors lead out of the kitchen onto a spacious rear deck, connected to a no-step sidewalk, leading to the back yard and driveway. The house also has a guest bedroom suitable for a care giver or a visitor. The living room, right inside the front door, offers all the amenities of a standard house and incorporates flooring designed for wheelchair use.

"If you met 20 guys in wheelchairs, there's a good chance that over half of them would have a care giver of some sort. The families and caregivers are being thrust into a whole new job description. You have to think about them too, and not just what you're going through," Morgan says.

Educating Realtors

One of the biggest hurdles for accessible housing and universal design is the education of realtors. "When a house is listed for sale and entered into the Multiple Listing Service, realtors are responsible for accurately describing features of the house. In the region encompassing Maryland, realtors commonly check 'Accessible Entrance' as a feature of the house, not realizing if the path to the door has more than a half-inch threshold or barrier, it really isn't accessible," Anderson says.

"This is a national problem. If you're disabled and you want to find a house, good luck. Builders, contractors, and code officials could be building these types of houses, serving the needs of diverse populations, but choose not to," he says.

Anderson believes the goal of providing affordable housing to the disabled population is not impractical or far-fetched. "Using universal design components in a home, such as wider doors, often does not cost more than five percent above the expense of standard construction materials," he says.

Anderson hopes to branch out from the Baltimore area and eventually serve clients in other sections of the country. Meanwhile, he is committed to spreading the universal design gospel to professionals in the housing industry, along with baby boomers, a population often reluctant to consider future needs.

One final quick fact: The nation's elderly population is projected to double in the next 25 years.

"Universal design just makes sense for everybody. It looks good and creates a roomy living environment," Anderson says. "If people were to be proactive and think about creating an environment, which serves their needs now and in the future, they're going to be able to make better economic decisions because they are not going to be forced to do it, they're going to be able to do their research and explore options. The key is for them to make a decision when they're able-bodied." UHD

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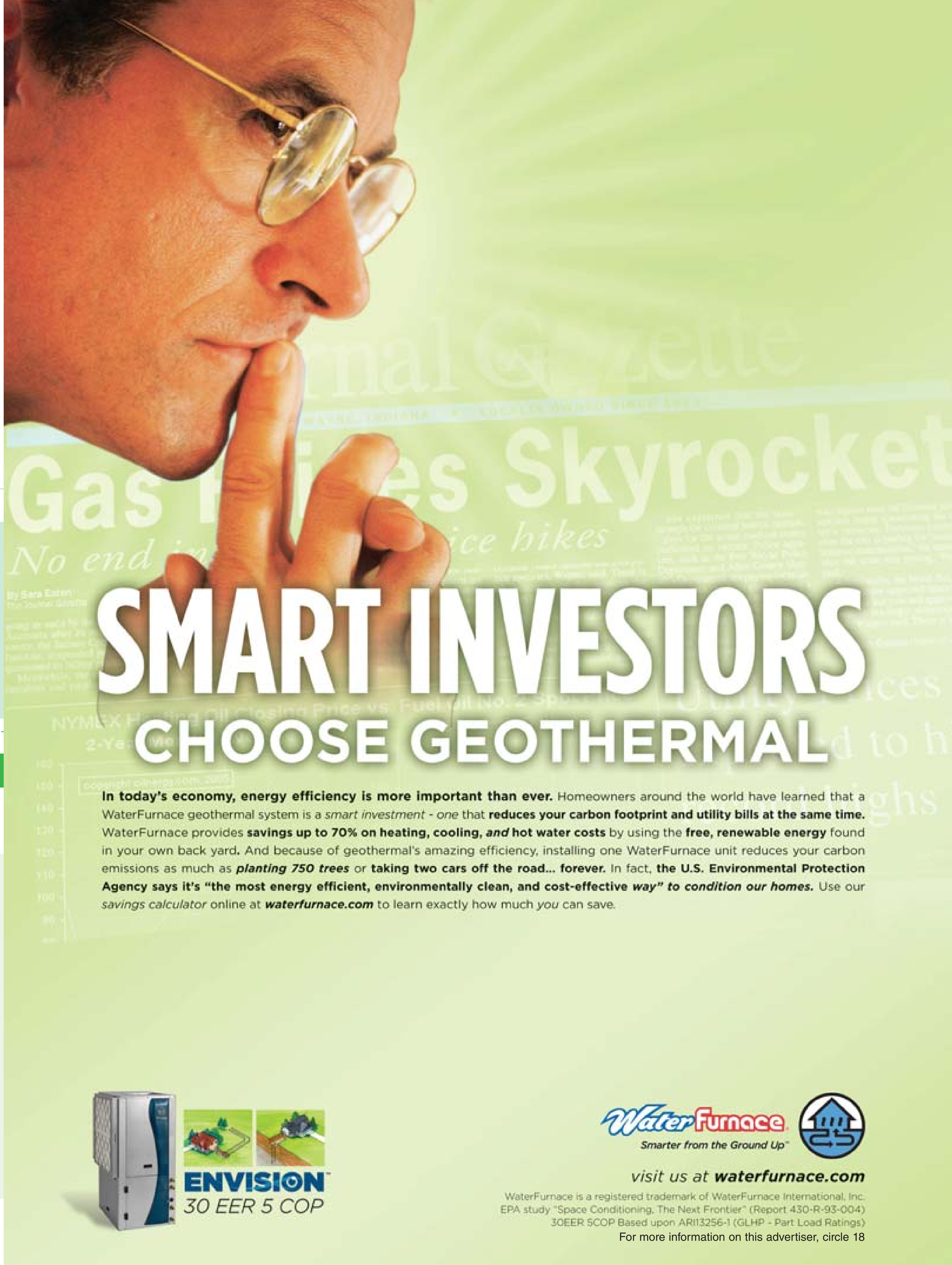

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